GLEANINGS IN BEE CULTURE

Published by The A. I. Root Co., Medina, Ohio.

A. I. ROOT, Editor Home Department — J. T. CALVERT, Business Manager.
H. H. ROOT, Managing Editor — E. R. ROOT, Editor — A. L. BOYDEN, Advertising Manager
Entered at the Postoffice, Medina, Ohio, as second-class matter.

VOL. XLIV. MARCH 1, 1916 NO. 5

EDITORIAL

WHO can send in a good photograph of an exhibit of bulk comb honey, in glass, if possible for publication in our July 1st issue? A subscriber requests information about the exhibiting of bulk comb honey.

Our Cover Picture

THE illustration on our cover for this issue shows David Running's concrete honey-house, work-shop, and cellar. The entrance to the latter is in a side hill, as shown—a most convenient arrangement. Mr. Running's description of the building, with two other illustrations and plans, appears on another page.

This Honey-house Number

IF the reader of these pages ever expects to go into beekeeping extensively enough to need a building aside from some woodshed or room in his private house, he will do well to lay this number aside and keep it for future reference. It contains nearly every feature useful in a honey-house, beehouse, or house-apiary; and at the same time it shows the arrangement of the hives in the yard with reference to the building. Wherever possible, it is advisable to put the apiary on a slight grade, and the building on the edge of a side hill. In this way the loads of honey, as Mr. Chadwick points out, will run down grade into the building. If the honey-extractor is on the side of the building that stands up on stilts, the honey can be run by gravity into a receiving-tank below. If this is elevated above the height of the wagon-box plus the height of a 60-lb. square can, one can draw his honey into the can and put it on the wagon without any lifting.

During the winter months beekeepers will do well to make their plans, if possible, to get the building erected before the active bee season begins.

Of course, where ground is on a level, as it is in most cases, one will be compelled to use a honey-pump.

Prospects for the Next Season's Honey Crop from Clover and Basswood Good

MR. FRANK MCNAY, formerly of Mauston, Wis., but of late years of Pasadena, Cal., remarked to us last winter when we were visiting at his place that he thought he could explain why basswood and clover would yield some years and not others. Said he, "If the ground freezes wet there will be honey; but if it freezes dry there will be no honey." This winter it froze wet, and it has been staying wet in practically all the clover and basswood regions of the northern states. If Mr. McNay's rule holds true, 1916 will be a bumper year for the clovers and basswood, provided, of course, no drouth sets in in the early part of May and June. It is to be hoped that the coming summer will not be exactly the reverse of the last one.

The Advantages of House-apiaries

WE would call attention particularly to Mr. E. C. Barber's article in this issue describing his beehouse and workshop. The house-apiary side of it shows some very excellent features—features that could be adopted to advantage in a house-apiary containing many more colonies than are provided for in this.

The scheme of furnishing light and ventilation by means of swinging sash is as good as anything we have seen. When one works inside of a building the bees will sometimes fly off the combs and crop down on the floor. By tilting the sash the bees usually fly to the window and escape. The

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plan of painting the entrances different colors, while not new, is good.

At the close of the article Mr. Barber gives some reasons for preferring the indoor plan of keeping bees. Every one of them is good. Except for the expense of a building of this kind we do not know but we would rather keep bees this way than by the usual plan outdoors.

The Pendulum Always Swings Back

SOME years ago an analysis of the honey market revealed the fact that comb-honey prices were firmer than those of extracted. So many large producers had changed over from comb to extracted, that comb honey at certain seasons of the year was a scarce article. Noting this, GLEANINGS urged the production of more comb honey, believing that the general market would be better balanced thereby.

It now appears that the pendulum may be swinging back again toward the other extreme. At least, there seems to be quite a large amount of comb honey in many of the principal markets which is moving but slowly and at a rather low price proportionately. Comb honey, while not a perishable product, is more likely to deteriorate if kept too long. We believe the 1916 market would be better balanced if a somewhat greater proportion of extracted honey were produced.

A Memorial to Joseph E. Wing, the Apostle of Alfalfa and Sweet Clover

THE following, from the *Rural New-Yorker,* will explain:

Here is something for those who knew and loved Joseph E. Wing, of Ohio. Since his death a fund has been raised by popular subscription for a memorial to this great agricultural teacher. The money is to be used to provide lectures on agriculture at one or more of the agricultural colleges each year. It is to be known as the Joseph E. Wing Memorial Fund Lecture. Men of national reputation will attend each year and discuss the things which Joe Wing stood for. It is better to have many persons each contribute small sums to such a fund, and we have no doubt some of our readers will want to help. If so, they can write direct to H. C. Price, Newark, Ohio—the chairman.

GLEANINGS most heartily joins in this, and hopes its subscribers, especially those in the West, who have profited by Mr. Wing's work in the extension of alfalfa, thereby creating new bee territory, will contribute to this fund.

As stated by the *Rural,* it is better to have many persons each contribute a small sum than to have a large amount from a few sources. If there ever was a man in this country who helped give untold wealth to the western prairies and desert lands, Mr. Wing was that man. He did much thru his advocacy of alfalfa and sweet clover to develop the honey industry, too, in an indirect way, in that thousands of carloads of alfalfa and sweet-clover honey are now produced in localities that furnished no honey before. He was also an advocate of sweet clover; and a month or so before he died he suggested that we get after a certain experiment station that was advising the farmers to kill sweet clover everywhere, saying that it was a noxious weed; and we did go after them by telling them they must have been asleep along with Rip Van Winkle, and that it was now time for them to wake up.

Under Such Circumstances Don't Kick the Barrel

FROM the *Atlanta Constitution* we learn that bees are likely to figure in a trial before the supreme court of Georgia.

It seems that "an Atlanta negro, Roscoe Richards, was standing last summer over a barrel full of watermelon rinds. The barrel was also full of bees feeding on the rinds, a fact which Roscoe didn't know. As he bent his head down into the barrel to see if there weren't something worth picking up, another negro kicked the barrel. The bees arose angrily and alighted all over Roscoe's ebony head and face.

"Roscoe turned over in the air; but when he alighted he came down like a cat on his feet, and his razor was already out and open. He is said to have attacked the other negro, and literally cut him to pieces. Richards employed lawyers; and when the case came to trial recently, he pleaded not guilty, and interposed the simple plea of 'self-defense.'"

The Work that has been done by the Bureau of Entomology in the Line of Apicultural Inspection Work

IT has been our pleasure to note an editorial in the *Entomological News,* referring to work done by the Bureau of Entomology, Washington, D. C., under Dr. E. F. Phillips, and particularly to the work done by one of his assistants, Dr. James A.

Nelson. We are pleased to present a portion of what the *Entomological News* has to say.

The Embryology of the Honey Bee. By James Allen Nelson, Ph.D., Expert Bee Culture Investigations, Bureau of Entomology, U. S. Department of Agriculture. Princeton University Press, Princeton, October, 1915, 12mo. Pp. vi, 282; 95 text figs., 6 plates; $2.00 net. The broad and comprehensive way in which the bee-culture investigations of the Bureau of Entomology have been considered and treated since Dr. Everett Franklin Phillips was placed in charge of them in 1907 is strikingly illustrated by the publications which have emanated from the investigators concerned. Snodgrass has given us the results of a careful and original re-examination of the anatomy of the honeybee; Casteel has corrected our notions of the manipulation of the wax scales and the behavior of the bee in pollen collecting; McIndoo has informed us on the olfactory sense and on the scent-producing organ; Phillips, C. A. Browne, B. N. Gates, G. F. White, and G. S. Demuth, singly or in conjunction, have dealt with various practical phases of apiculture and especially with bee diseases, while Phillips has summed up these and other researches and experiences in a recent volume in The Rural Science Series. Now comes the still more esoteric volume on the embryology of the honeybee. The keynote to all this work is in the first sentence of the preface contributed by Phillips to Nelson's book before us: "The good beekeeper is he who is interested not only in those things which have to do directly with the production of honey, but to whom everything pertaining to honeybees has a deep interest." The conception that "everything pertaining to honeybees" should include an extensive and intimate knowledge of structure, physiology, behavior, and embryology exhibits a breadth of view which it is a pleasure to emphasize in a journal devoted rather to pure than to applied entomology.

Butschli (1870), Kowalevski (1871), Grassi (1884), Blochmann (1889), Petrunkewitsch (1901, 1903), Dickel (1903), and Nachtsheim (1913) have described various phases of the development of the egg of the honeybee; but Nelson's work is more extensive and thorough-going than any of these, altho it is devoted to the embryonic history of the workers and queens only, not of the drones.

The Massachusetts Convention and the Spraying Situation

We wish to call especial attention to the program of the annual beekeepers' convention at the Massachusetts Agricultural College, March 14, 15, 16. A complete program of this convention is given under Convention Notices on another page of this issue. One of the chief subjects for discussion, and one which should interest every beekeeper and fruit-grower, is the subject which will be discussed in the Beekeepers' Round Table on "Spraying Practices versus Beekeeping." The Round Table discussion on this subject is an effort to bring out various aspects of a problem confronting the beekeepers of the country as a whole. First, Dr. Burton N. Gates will present "The Beekeepers' Standpoint." Second, such evidence as has been obtained by the chemist, which bears upon the possibility of bees being killed by arsenical sprays, will be presented by Dr. E. B. Holland, chemist. Third, the horticulturist who is obliged to spray in order to control insect pests will present his side of the question, stating, doubtless, how his practices may be adapted so as not to conflict with the beekeepers' interests. He will also, possibly, explain the relationship of his spraying methods to the insects which are being combated. W. W. Chenoweth will present this phase of the situation. Fourth, the forest entomologist will explain his policy in similarly combating insects, and suggest any method which may be carried out in an effort to obviate a conflict with beekeeping interests. A. F. Burgess will consider this phase. Fifth, Fred Southard will present the side of the municipal forester, and will endeavor to determine how the different varieties of shade-trees in towns and cities may be sprayed for insect control without working harm to the beekeeping interests. Sixth, a final discussion will take place in which it is hoped that prominent beekeeping authorities will take a leading part.

It is hoped that the material which is prepared for this occasion will be reported and presented in form for publication, in order to be available for beekeepers and spray men the country over.

The Opening-up of More Bee Country by the Purchase of Territory by the United States in Northwestern Mexico

Our readers have already been informed of the wonderful bee country known as the Imperial Valley in southern California. This country, formerly a desert, has, by irrigation, been opened up so that now it is one of the most productive of any region in the United States. It is said to have land equal to that in the Nile Valley in Egypt. But it appears that there are thousands of acres beyond the boundary line that are just as good, and which Uncle Sam is desirous of purchasing, and which Mex-

ico, in her present impoverished condition, is equally anxious to sell.

For some reason which no one is able to explain satisfactorily, except thru the agency of bad diplomacy and crooked politics, the southern boundary line of the United States takes a sharp dip upward, thereby missing some of the best soil on the continent. Had the original boundary been carried down along the line of parallel 32, the area of the Imperial Valley would have been much larger than it is. It would make available thousands and thousands of acres of land that would open up good bee locations, and which would be as good as any territory now in the United States.

Two bills are now before Congress providing for the purchase of Lower California, that large peninsula that extends southward for 800 or 900 miles, and also for the purchase of that strip which bars us from the Gulf of California.

In view of the fact that this opens up some beautiful bee country our subscribers, especially those in the West, are urged to write to their Senators and Representatives in Congress, urging them to support and vote for these two bills. According to a writer in the *Independent*, Mr. Edwin E. Slosson, "It is an exceptionally favorable time to secure these much-needed accessions to our territory now when the presidency of Mexico is held by a man who owes his position to American support, and when the Powers whose ambition such action would thwart are occupied elsewhere. . . . The money we would pay for it would be very welcome to Mexico, now impoverished by five years of anarchy."

There certainly can be no objection to the acquisition of additional territory to the United States by honorable purchase, whatever we may think of the present policy of the warring nations in Europe in the line of land-grabbing simply because they are big and powerful.

This crooked boundary line which, early in the '50's, took a sharp dip northward, goes back to some crooked history on the part of some of Uncle Sam's diplomats in the early days. During those times Daniel Webster did some things that will not go down very greatly to his credit. According to Edwin E. Slosson, already referred to, the children who are now studying United States history will come to regard Daniel Webster as the New Yorkers now regard Benedict Arnold.

It is going to cost millions and millions to undo the work of Webster and some of his colleagues.

There are additional reasons why we should have the Gulf of California and Lower California, because it is apparent that Japan and Germany have been looking with covetous eyes on this part of the world. Mexico is too weak to protest against either of them establishing coaling-stations there; and if Uncle Sam acquires the territory it will end all possible chance of international complications over the Monroe doctrine, because it is to be presumed that neither of the nations mentioned will attempt to put foot on our territory when once acquired.

Imports of Honey; Why the Price of Domestic Honeys of Lower Grade is Down and Markets Slow

THE general belief that the low prices received for southern extracted honeys of low grade have been caused by increased imports of low-grade extracted from Latin America is confirmed in Bulletin No. 325 published by the Department of Agriculture.

During the fiscal year ending June 30, 1915, the United States imported three times as much honey from foreign countries as had been imported in any previous year. The total foreign imports for the five fiscal years ending June 30, 1910 to 1914, were 104, 113, 115, 116, and 75 thousands of gallons, as compared with the 303,965 gallons imported in the fiscal year ending in 1915. The value of the imports for last year totaled $124,843.

This change has been due to the war in Europe which closed to commerce certain of the countries which had been heavy buyers of Latin American honey. The beekeepers left without a market shipped the product to the United States.

The bulletin sums up the statistics in the following conclusions:

"Compared with the total production of the United States as reported by the census, the heavy imports for the present fiscal year, which from all sources probably total over 600,000 gallons, are therefore about 12 per cent, though probably less, if compared with the actual production. Compared with the portion of the home crop actually marketed, however, the percentage would be much larger, and its absolute bulk compared to the quantity of low-grade extracted honey produced here for market is so great that it has seriously interfered with the marketing of the latter, and, combined with the financial depression in the South, where the lower grades are largely produced and consumed, has forced the prices of such

grades to extremely low figures. The heavy inward movement of foreign honey shows no present signs of abatement and must be accepted as a probable factor for some time to come."

Before hasty proposals to raise the tariff on foreign honey are broached, it should be remembered that Porto Rico and Hawaii, insular possessions of the United States, together exported to this country during the fiscal year of 1915 more than the total imports from foreign countries combined. Consequently any tariff legislation directed against foreign honey could not affect the larger part of the imports. The imports from the island possessions have arisen so high during the last two years that, even if practically all foreign honey were shut out, it would be impossible to reduce the total imports to what they were in 1912 or 1913.

The new bulletin will be found of interest to beekeepers generally, and may be obtained from the Superintendent of Documents, Washington, D. C., at five cents a copy.

The Lament of Job, Again; What is the Matter with the Alexander Treatment for the Cure of European Foul Brood?

THE following letter, received from Mr. Pressler, of Pennsylvania, will explain:

Mr. Editor:—In your editorial, page 89, entitled "Lament of Job," you wish to know if there is any one who has been able to stamp out absolutely European foul brood. Then you say, "How about it, Dr. Miller?" I believe that precludes all but the old Nestor of bee lore. What is the matter with hundreds of men like Dr. Alexander, scientific in more than one of the many branches? If Dr. Holtermann wants to know if "any one" ever succeeded, let him come right here to Williamsport. I can take him 14 miles east of here, where the first beekeepers' association was organized in this state for the purpose of checking the spread of this disease. This culminated subsequently in the formation of the state organization here in our court-house, with the writer as presiding officer. At that time every yard was infected in this county, including thousands of colonies, and now I am satisfied not a cell abounds. All were cured absolutely, and without the loss of a single dollar other than labor, and at first a few dollars for experimenting on formaldehyde gas.

Ellis E. Pressler.

Williamsport, Pa., Feb. 8.

No, Dr. Miller is not the only one who is invited to tell how we can cure European foul brood absolutely, without leaving a trace of the disease behind. If we are correctly informed, some who have tried the Alexander plan have found that the disease came back again. Others report that it worked successfully. This treatment as Mr. Alexander gave it out a few years ago, and that proved to be such a great success with him and many of his followers, was as follows:

Go to every diseased colony you have, and build it up either by giving frames of maturing brood or uniting two or more until you have them fairly strong. After this go over every one and remove the queen; then in nine days go over them again, and be sure to destroy every maturing queen-cell, or virgin if any have hatched. Then go to your breeding queen and take enough of her newly hatched larvæ to rear enough queen-cells from which to supply each one of your diseased queenless colonies with a ripe queen-cell or virgin just hatched. These are to be introduced to your diseased colonies on the twentieth day after you have removed their old queen, and not one hour sooner, for on this very point your whole success depends; for your young queen must not commence to lay until three or four days after the last of the old brood is hatched, or 27 days from the time you remove the old queen. If you are very careful about this matter of time between the last of the old brood hatching and the young queen commencing to lay, you will find the bees will clean out their breeding-combs for this young queen, so that she will fill them with as fine healthy brood as a hive ever contained. This I have seen in several hundred hives, and have never seen a cell of the disease in a hive after being treated as above described.

It is not necessary to remove any of the combs or honey from the diseased colony; neither is it necessary to disinfect any thing about the hive. Simply remove the old queen, and be sure the young queen does not commence to lay until three or four days after the old brood is all hatched. This treatment with young Italian queens is a perfect cure for black brood.

In addition to the foregoing letter we have received a large number of other communications—so many, in fact, that we are not able to give space to many of them; and what we do publish will have to be condensed. We may say, in the mean time, that one of our correspondents in Canada believes that European foul brood is one of the worst scourges that ever visited this country. He says he has had extended experience with it, and thinks the only way to get rid of it is to burn every colony—hives, bees, combs, and all. If it gets a start in the apiary he would burn the whole yard. He would favor legislation to compel every beekeeper to exterminate colonies affected with this scourge.

Another correspondent believes that, in addition to requeening, the McEvoy treatment with two shakings should be used, and the hives disinfected.

Quite a large number, including Mr. Pressler, believe that the Alexander treatment is quite effective.

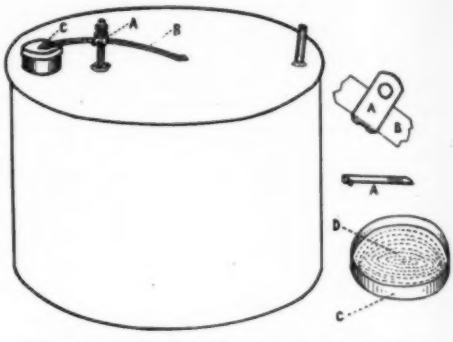
We are surprised at the amount of testimony that seems to favor Dr. Miller's views as expressed in one of his Stray Straws in this issue—namely, that it is not necessary to destroy the combs. In the midst of the mass of this conflicting testimony the reader will have to exercise his judgment in the matter so far as the law and the inspectors will permit.

In the mean time the reader is referred to one of Dr. Miller's paragraphs on this subject in this issue that is characteristic of the man. Verily, the sage of Marengo will never grow old. If there was ever a man who is able to carry a smile into printed matter it is he.

A Safety-first Safety-valve

Two beekeepers have had trouble with their steam uncapping-knives, in that the opening in the end of the knife became clogged and the steam pressure in the boiler increased enough to burst the boiler. It is next to impossible to have any such trouble with the ordinary amount of fire used under one of these little boilers unless the opening at the point of the knife for the escape of the steam becomes clogged up. In ordinary use this opening will be kept clear; but if the knife is used to push away the cappings or slumgum in the capping-melter, especially when the knife itself is cold before steam is up, some of the melted wax, or fibrous material from the cocoons, may clog the opening in the point of the knife so that the steam cannot circulate. Consequently, unless the rubber hose blows off the tube, either at the knife or at the boiler, something will surely "happen." Of course, a wooden paddle is the proper implement to use to poke away the accumulation of cappings, altho when the knife is hot and steam is issuing from the point, there is very little danger that it will get clogged up; but to be on the safe side we believe that a safety valve should be applied. If a common teakettle is used for a boiler—and, by the way, this makes one of the very best boilers imaginable—there is not much danger of a serious explosion, for the cap will be forced out before the steam pressure reaches a really dangerous point. As has been explained before in these columns, if a teakettle is used the cap should be fitted in tightly enough to hold the steam, by means of several layers of cheese-cloth.

A large cork, at least an inch in diameter, if not pushed in too tightly, works after a fashion; but for a ten-pound pail, a gallon honey-can, or copper can made for the purpose, we recommend the following arrangement for a safety valve.



Steam honey-knife boiler, showing construction of safety valve. A, clip which holds super-spring to adjusting-screw. B, super spring. C, tin cap covering 1-inch brass tube. D, rubber packing within tin cap.

The tube for the hose should be soldered at one side of the can or boiler, as indicated in the accompanyning sketch. About an inch and a half from the opening where the boiler is filled, solder an ordinary brass binding-screw from the carbon of an old dry battery. Hunt up a round tin "salve-box," the cover of which is just large enough to fit over the opening in the boiler, and cut a round piece of rubber packing that will just fit inside. If none of this is at hand, heavy cardboard will answer nearly as well. See C and D in the drawing.

Out of heavy tin make a little clip, A, and punch a hole in one end so it will just slip over the screw before mentioned. When the super spring is in position, as shown, put on the tin clip, A, and turn down the brass nut until there is some tension on the spring—just enough to keep it in position. When you use the knife, if steam leaks out under the cap turn the screw down a little more.

With this arrangement, in case anything should go wrong with the knife, the steam, when the pressure increases somewhat, will leak out under the cap. Furthermore, this sort of arrangement is far easier to open up for the purpose of adding more water. There is no hot slippery cap to unscrew, for the super spring can be pushed back away from the tin cap. It is not even necessary to change the adjustment of the screw.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.

WILLIAM BEUCUS, you say, p. 117, "The black is the older race." Where do you get that? All authorities I've ever read say the other way.

"WE still incline to the opinion that Mr. Ellis actually heard "quahking," page 124. Then that's the first quahking outside of a cell, and the first with tones of unequal length.

TIMBERLINE RIGGS, something seems wrong with your foundation, p. 102. You say, "In order for the disease to get a start, our bees must in some manner become weakened in vitality." "In this locality" the disease gets a start in colonies with strong vitality. And I'm a bit skeptical about its being crowded out of a weak colony—or a strong one either.

ARTHUR C. MILLER, after reading your article, p. 107, I don't wonder I didn't succeed with the smoke-distress method. I followed the instruction to give so many puffs, and I know they couldn't have filled with smoke the deep space below and all the supers above. You say, "When colonies are at work in supers, for gracious sake let them alone." Now you quit that. About the only time I want to introduce a queen is when a colony is queenless, and that's mostly when supers are on. And then you don't want me to butt in. Huh!

FIVE pounds of sugar and two pounds of water make a syrup of the consistency of honey, and so I counted that 5 pounds of sugar might take the place of 7 pounds of honey. But there may well be a loss in the feeding, and it may also be that honey is the better food, so a pound of sugar may be none too much to replace a pound of honey. But, say! don't print this Straw in the copy you send J. L. Byer. I don't want that Kanuck to be chuckling over my backdown.

M. JOHNSTONE'S plan for proving a plurality of laying workers in a colony, p. 78, is bright. Years ago it was proven in Europe in a different way. From a colony of laying workers many of the bees were taken and dissected, and a large proportion of them were found to contain eggs. I wish Mr. Johnstone had explained what he meant by saying "you will never forget the appearance of those discovered in the act." I suspect, however, that I know, for the only one I ever caught in the act had a striking appearance with its wings crowded up about its head in a very uncomfortable manner.

NO TROUBLE to make labels stay on tin if you have the right paste, p. 93, but not a word as to what the right kind is. Now, isn't that exasperatingly aggravating? If you know, why don't you tell? [As for the right kind of paste, it is not proper to advertise in the reading-columns. The fact is, however, you can buy a paste at almost any drugstore or stationery-house that sells paste that will fix labels to tin. There is a special paste for the purpose, however, and the same is advertised in another column.—ED.]

AN Ohioan with nine colonies and a few neighboring colonies asks how he can rear queens from his one Italian colony and be reasonably sure of pure mating. A bit difficult. It's just as bad to have neighboring bees two blocks away as to have them in your own yard. You can encourage drones in your Italian colony and suppress drones in the others and then take your chances. Possibly you can have drones suppressed in neighboring colonies. But it isn't best to have drones and queens from the same colony.

THE new spelling in GLEANINGS is in the line of economy, and I rather like the looks of it, except "thru," which gives me a jolt every time. But if I'd always been used to "thru," spelling it "through" would give me a still worse jolt. I remember when honor, labor, etc., in place of honour, labour, etc., and aretic in place of aretick seemed just as strange as the present changes. Our spelling is by no means a fixt thing, and I wouldn't be stopt from making other improvements that should be accomplisht.

R. F. HOLTERMANN, I don't know whether I'm Eliphaz, Bildad, or Zophar; but while you're sitting among the ashes busy with your potsherd I may as well join the others, if only to "darken counsel by words without wisdom." You fear European foul brood cannot be stamped out. Well, you never entirely stamped out the weeds in your garden; yet I venture to say you've done good gardening. And you can raise good crops of honey while fighting European foul brood. When I first met it I looked forward to it with horror. As I look back upon it there's nothing very bad except the foolish loss of a lot of good combs that you can avoid. Cheer up, brother; things are not so worse as they might be.

Grace Allen

THE DIXIE BEE

Nashville, Tenn.

I am glad to note Mr. Crane's success with kerosene to keep off robbers. We have used carbolic acid, but should prefer kerosene.

* * *

That cabinet for Hoffman frames, page 122, Feb. 1, is a delight to look at, and probably more than that to possess. When we were feeding last fall, we realized that we needed some convenient contrivance for holding the frames that were removed from the supers for feeding. This looks admirably suited to the purpose, at least for a small apiary. In large yards, if much feeding were done in supers the surplus frames of comb must require careful handling. There are other times, too, when the bees are not occupying all the frames, and combs are awkwardly fragile things to stack up carelessly. Mr. Doolittle's overhead plan would take care of a generous surplus.

* * *

Don't we have good-looking covers? I cannot resist saying how I appreciate them and enjoy them. The Florida view on the cover of January 1 is exceedingly interesting, with the white hives under the drapery of picturesque Spanish moss, and then the little lake beyond. If ever I get to Florida again I shall certainly go looking up some apiaries, just as, if ever I get across the water, I shall go hunting out some of those rare and wondrous honeys described so fascinatingly on page 995, Dec. 1, and shall never be quite content till I have tasted the honey of Narbonne and that of Bourbon.

MARCH

This mad young March! with the sting of his laughter
Flung back like a dare as he roars thru the days,
While troops of wild winds, reeling recklessly after,
Dance round with delight at his riotous ways!

Who cares what rough unrest he brings?
He's doing things! He's doing things!

He lashes the trees till their sap is atingle,
He teases the grasses and bullies the birds,
He rowdies around with the shutter and shingle,
And shouts without rhythm unmusical words!

Who cares what savage song he sings?
He's waking things! He's waking things!

The hives by the fence as with gossip are humming—
"We know him, the rogue!" Aye, they know him, those bees!
And swift thru his winds they are going and coming
To plunge in the pollen of feathery trees.

They chide no mood whose courage flings
The bonds from waking hearts of things.

I feel like raising my voice in profound gratitude when I read any protest against division-boards. They are the one thing I despise, and the effort to pull them out is dangerous to my disposition. "I don't see a bit of sense in them—not a bit," I have declared over and over again to Mr. Allen, yet I might never have dared speak right out in meeting, as I supposed everybody else must be devoted to them and utterly dependent upon them. But now I am pleased to add my word. Somebody had persuaded us, when I once threatened never to use one again, that they were necessary to the building of straight combs, so for a while we slavishly used them when there was a lot of foundation to be drawn; but when the hive or super once got filled with combs, out with a swish came my pet aversion. They are all right and convenient when you're making a nucleus or contracting a colony, but in a full hive—no, thank you.

* * *

Aren't all those articles about this new bee disease creepy? Whether we like the thought or not, war does not seem to be confined to the human race alone. Nature stages a perpetual war. Germs, insects, plants, and animals are at war against one another. See what the bees alone have to fight. Even with the help of man's intelligence it is a hard battle against moths and spiders, ants, and birds, even robber bees, and, worst of all, against the diseases, germ or otherwise, that sometimes wipe them out by the thousands and hundred thousands.

BEEKEEPING AMONG THE ROCKIES

Wesley Foster, Boulder, Colorado

During January bees did not get much chance to fly, and the temperature ranged around zero for a longer time than is common here in Colorado. Bees, however, seem to be wintering well, as none but weak colonies have died so far. The quality of winter stores seems to be good on the whole, despite the late nectar secured from the sweet-clover bloom. There is abundant snow in the hills, and the ground is in good condition. Alfalfa and sweet clover are up to normal if not above. Comb honey will be all gone before the new crop comes on, and there will be very little extracted left when new honey is extracted.

BEEMEN AS HONEY-TRADE BUILDERS.

Colorado beekeepers are certainly not far behind others in the pushing of honey sales. The extracted-honey crop of Colorado was very poor, and, to hold their customers, I know of half a dozen beekeepers who have purchased in the aggregate twelve cars of California, Nevada, and Arizona honey to supply the trade they have built up. Probably more than fifteen cars of extracted honey produced west of Colorado will be distributed by Colorado beekeepers and Colorado associations. The price paid ranges from five to six and a half cents delivered in Colorado, and is sold at seven and a half to nine cents in a wholesale way.

EXPERIMENT-STATION BULLETINS.

The Colorado Experiment Station has just published Bulletin No. 211, "Colorado Plants Injurious to Livestock," by George H. Glower and W. W. Robbins. This is a most valuable paper to the livestock industry, and is well worth reading by beekeepers who wish to learn the relation of plants and flowers injurious to animals, that are of economic value to the honey industry.

Probably ninety-nine per cent of the losses to livestock come from larkspur poisoning; but the white larkspur growing on the plains east of the mountains has never caused any losses to livestock, so far as known. The larkspur growing in the foothills causes most of the trouble. Both furnish nectar for bees.

The wild cherry, of so much value to the beekeeper who lives near the foothills, is very dangerous to cattle if they eat the wilted leaves.

The lupines, milkweed, and the famous locoweed, are some of the other honey-plants that are the bane of the cattleman. The beekeeper who knows the various poisonous plants will be better informed, and of more practical value to his neighbor, if he has a thoro knowledge of the poisonous plants of his district. He should know that larkspur comes on in June, lupines and loco at about the same time, and that larkspur poisons generally in June and July, while lupines do most of their damage late in the season, when cattle and sheep eat the pods.

THE BEEKEEPER'S SHOP.

One of my first recollections as a boy is the establishment my uncle Oliver Foster had for carrying on his beekeeping operations. He had four separate buildings surrounding his home apiary. On the east side was the warehouse for bee-supplies, which he handled in car lots. Under this building was the bee-cellar. Next to this building, on the southeast of the apiary, was the wood-working shop where he manufactured some of his own inventions such as the Foster super. There he had his saw-tables, engine, and lumber storage. On the west side of the apiary was the wax-house and vinegar-shed combined. This was handily near the pump, as every beekeeper readily will realize the advantage of having water close by when working wax. On the north side of the apiary was the extracting-house, comb storage, and everything was handled methodically; and there was a place for everything under cover. I do not recall ever seeing any empty hives piled outside. A house was built at each outyard so that all equipment could be kept dry.

The extracting-house necessarily had the most thought put upon its arrangement, as here was where the rush work of the season was done. The building was mouse-proof. The uncapping-can was placed at one end of a table upon which the honey was piled as brought in. Filling of the cans from the strainer-covered vats was done at one side of the extractor, and slightly below it, as honey-pumps were not used. All the work in the honey-house could move forward in a regular procession, no one getting in the way of others. As a boy I often got in the way in my desire to eat the honey-wet cappings, and I don't know of any chewing more delicious—do you? As fast as the cappings were drained comparatively free of honey they were taken to the wax and vinegar house, where they were washed, the honey water going to make vinegar, and the wax into the rendering-vat. This house also was the foundation factory where thousands of sheets of foundation were made.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.

One of the most unfair resolutions ever offered and passed by any organization was passed by the State Association. An exhibit was ordered, after which a resolution was offered disclaiming any responsibility by the association for the expense entailed. In other words, the association gave full sanction for an exhibit to be placed, for which it was to have the credit and somebody else pay the expense.

* * *

While visiting a friend recently, my attention was called to a colony of bees of exceptionally high honey-gathering qualities. My friend said he could tell that queen's daughters from any others in the yard of over two hundred colonies. I asked him what particular characteristics they possessed that they were so easily recognized. He answered that it was principally by the way their bees stung. They were Syrians.

* * *

In the *American Bee Journal* for December, page 412, Mr. Byer takes issue with Dr. Phillips on the matter of over-production. To my way of thinking, Mr. Byer has the best of the argument. The fact that it is necessary to resort to all kinds of ways to dispose of a season's output is conclusive evidence of over-production. Under-consumption, to be sure, may be explained as the reason for over-production; but until consumption is increased to a point where it absorbs the production, over-production will remain a fact.

* * *

In starting an experiment station for bees on an island in San Francisco Bay, the State University has taken the lead in disease control by scientific search. Why not give the entire foul-brood work over to men who are educated, and equipped to handle the situation? When our last foul-brood bill was up for sanction by the State Association I was told that the inspectorship must be in the hands of the beekeepers. What we need as an inspector at the head of this department is an educated man, one who can give a scientific analysis of any disease which may be found.

* * *

From the *Wide World Magazine* I have clipped an article that tells something of migratory beekeeping in the Holy Land. After reciting the unique position of Palestine geographically in that the flora of three nations meet there, it tells how two brothers followed the flora, camping first in the low altitude, after which they transported their hives on camel back to a higher elevation, thus following the consecutive blooming period of different flowers. By using modern extracting machinery they were able to secure six tons of honey from one hundred colonies in a year. But the most striking assertion in the entire article was that this yield exceeded the yields on the great honey-farms of America and Australia threefold. The assertion that this yield is three times as great as on the big honey farms of America and Australia places some doubt as to the knowledge of the writer on the entire article.

* * *

Dr. A. F. Bonney, in the *American Bee Journal* for October, page 243, says: "I made several ventures into the domain of advertising to sell honey by mail, and find one serious handicap—the breaking of containers by careless mail-clerks and others who handle the sacks. These men, or many of them, seem to have an inherent hatred for parcel-post packages that are at all heavy, and a fragile tag is little or no protection." Dr. Bonney may know the honey business; but the assertions he is making in regard to postal employes is not placing them in the proper light, and leaves me to conclude that Dr. Bonney knows very little about true conditions in the postal service. Ten years of my life have been spent in the railway and city delivery service of Uncle Sam, and I wish to say that in nine cases out of ten it is with the packing rather than the men who handle the packages. The fragile tags are respected by postal employes, but they will not cover the faults of the one doing the packing. When a fragile parcel goes into a sack a fragile tag is attached to the sack outside. These sacks are handled as carefully as is possible with the volume of other parcels that are daily going thru the mails. If honey is packed properly it will be delivered in good condition; but do not expect to send comb honey thru the mails without proper shock-absorbers, corrugated paperboard, or something of that nature. Comb honey requires more careful packing than eggs.

NOTES FROM CANADA

J. L. Byer, Markham, Ont.

Mention is made in the January 1st issue that it has been rather cold in Florida. My father is "wintering" on the east coast, about 100 miles south of Jacksonville, and he writes me that during all January there were only three days when he wore a coat, and there had been no frost whatever. Incidentally he says in one letter, "This place looks like a paradise to me"—some boost for Florida, eh?

* * *

The cold weather predicted in my Notes for January 1 has failed to arrive. At this date, Feb. 5, we have had little severe weather and almost no snow. We have had abundance of rain and much mild weather all thru January, but not nearly as warm as friends in Ohio have written me about, when the thermometer went up to over 60 degrees. The highest noted here was 47 on two different days, and unfortunately both of those days were very cloudy; so after having a very mild January our bees did not have a thoro flight. No doubt in some sections of Ontario if the sun shone on those two very mild days the bees had a fine flight. Even at the north yard, where snowfall is usually heavy, there has been but little there this season.

* * *

On page 75, Jan. 15, request is made from purchasers of queens that they report percentage of pure matings in untested queens bought. We have bought a lot of queens, and only the untested brand; and while I have kept no memorandum as to actual results as to pure matings I must in all sincerity say that in the great majority of my dealings we have been thoroly satisfied. More than that, I firmly believe that some of the most honorable men in the beekeeping business are engaged in rearing queens, and our treatment in nearly all cases has been all that could be desired. Punctuality in answering business letters is a splendid feature in any business; but with the queen-breeder it is an actual necessity, and with few exceptions I have had no cause to complain in that line. Any queens that have not made good have always been replaced at once. With these few exceptions, and in some cases, knowing the generosity of the breeder, I have hesitated to report any mismatings, etc., feeling that I had no real cause to complain, and knowing that, if I did, queens would come at once to replace any that were not what they should be. In one instance, in common with others, we were much disappointed with the methods of doing business and the poor trashy stock of a certain breeder of Carniolans, so called. Failure to answer letters, etc., is bad enough itself; but when stock is worthless in the bargain, that is a combination none too pleasing to the man who spends good money for queens.

* * *

HONEY PUBLICITY.

At the Syracuse convention held a few weeks ago, much of the time was taken up in discussing various plans of advertising honey. A writing-tablet that has been used by New York beekeepers for a number of years was on exhibition, and to the writer this appears to be a good thing. This writing-tablet, as many know, is like the ordinary tablets used for school and other work; but in addition it has a lot of printed literature on both sides of the front cover, telling of the products of the bee. One of the chief difficulties in circulating this tablet, as nearly as I could judge by the discussion, was the matter of getting stationery dealers and others to handle it. It occurred to me that perhaps some of the dealers in beekeepers' supplies could handle this in the regular way with other goods; for with but little alteration the tablet could be used in any place, and I feel sure that our New York friend would not be at all jealous. The changes I have in view are the following extracts which would have to be cut out in order to make the tablet acceptable to all parts of the country.

"Scotland and Ireland produce a superior grade of honey in the Eastern hemisphere, and New York and New England in the Western."

None of us would dispute those claims; but there are other localities producing "superior grades" too. What is there to hinder some wholesale plan being originated to get a tablet like this before the public? It is a plan of advertising that could be carried on at cost; and as these tablets are constantly before children and old people as well, would not the plan be a good paying proposition? This is a live subject, and personally I should be pleased to hear the views of others better qualified to speak on a matter of this kind than I am.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.

THE HONEYBEE AND HONEY.

"Is the honeybee a native of North America?"

The honeybee is not a native of either of the Americas if I am correct. I am told a colony was landed in Boston, Mass., in the year 1670, and that they were brought there for a twofold purpose. The prime object was to secure their delicious and health-giving product which is so thoroly enjoyed by nearly every one; and, second, the great and almost universal benefits coming to all localities where they are kept, on account of their unpremeditated work in the fertilization of all blossoms in which nectar is secreted."

"Do you mean to say that the honeybee is a necessity toward the perfection of fruit from all blossoms?"

I do not wish to be understood as saying from *all blossoms;* but, according to close observation for the past 45 years, *all blossoms which secrete nectar* need the honeybee or some other winged insect for their perfect pollination. I am well aware that Darwin, the great naturalist, had nothing to say about nectar secretion in flowers when he said, "The more bees the more flowers; the more flowers the more seeds; the more seeds the more flowers; the more flowers the more bees." This shows that, even tho he may have observed closely, he did not think it as important to mention that there are more of the seed-producing plants which do not need the aid of the bees or any other insects, than there are of those which do—that it is only those which do need the aid of the bees that the bees visit, and that the reason why the bees do so visit is because they are invited thru the bountiful supply of nectar secreted by such needy flowers. This is true of fruit as well as of seeds.

Take the wheat from which our bread is made. Did you ever see a bee at work on its bloom? The reason for this is that it is self-pollinating, therefore no nectar is secreted; and no nectar, no bees. On the other hand, take buckwheat. The bees hover over it till their merry hum is music to the apiarist's ears. Why? Because nectar is secreted. Neither a rustling breeze nor a hurricane could pollinate the blossoms. Among forest trees, the basswood with its thousands of inverted or hanging-down flowers calls for the bees to turn themselves upside down to pollinate them; hence nectar is secreted. On the other hand, the beech-tree bloom is pollinated with the slightest breeze thru its foliage.

What is applicable to the buckwheat and basswood applies to nearly all of the fruit-trees. Hence we find the apple, pear, cherry, plum, and peach, all secreting nectar when the weather is favorable. In certain places years ago, bees were banished, owing to a belief that in gathering nectar the embryo seed or fruit was deprived of something needful for its full perfection. Later it was found that a lessened or poorer crop resulted, so the bees were invited back again.

"But what about the honey part?"

We are told, and truthfully, I think, that honey is the most wholesome and easily absorbed food known to man. Owing to the peculiar conditions and environments of honey-bees during their period of winter confinement in the hive, their surplus honey, stored by them for the purpose of carrying them thru the winter period, is something entirely different from any other substance. It is already prepared by the bees before it is placed in the cells. When we eat honey we have only to assimilate its varied life-giving elements. This is the only food of which it can be truthfully said that some other animal has specially prepared it for our assimilation, thus precluding the necessity of that labor on man's part.

"That is something entirely new to me. I had looked on honey as the sweetest of all sweets, and so proclaimed when I was offering for sale my extracted product."

We were told nearly half a century ago that honey is not as sweet as cane sugar, altho the different acids it contains gives the impression to the sense of taste that it is sweeter. This accounts for the fact that for hundreds of years honey has been termed "the sweetest of all sweets;" and the question asked, "What is sweeter than honey in the honeycomb?" Here we have the pleasure of the sensation produced by sweetness without the danger of retarding the action of our digestion when honey is eaten in large quantities, as is the case with most of the candy and sugars.

Some object to eating comb honey from the fact that the wax comb is entirely indigestible. But because it is wholly indigestible the stomach makes no effort whatever to digest it. The particles chewed fine are an aid to digestion. Comb honey is the most wholesome, not only of any sweet, but of any food known to humanity.

GENERAL CORRESPONDENCE

AN UNCAPPING-ROOM ARRANGED ON THE GRAVITY PLAN

BY P. C. CHADWICK

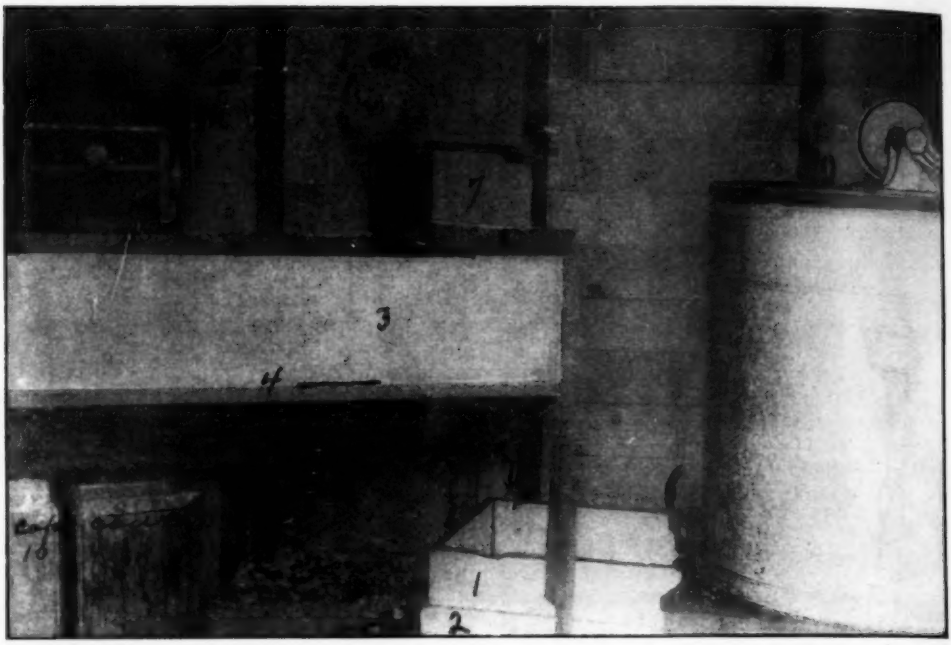
I have long thought of giving a plan of my honey-house and extracting-outfit arrangement. This issue furnishes me the opportunity.

I am making no claim that I have an arrangement superior to all others; but I am sure I have one which is far superior to many others. So I give my plans with the idea that they may be of assistance to some, and am looking forward to the possibility of gaining something from the ideas of others.

Gravity plays a prominent part in all the work of getting the honey from the hive until it reaches the can. Let me first say that my yard is located so that nearly every hive is on higher ground than the honey-house, making the work of wheeling the honey a comparatively easy task. The floor of the honey-house is on a level with the ground at the entrance door, but at no other point. The ground slopes rapidly under the house, to the rear, where the fall has reached a point that will allow the honey-tank to go under the rear of the building as shown in the cut. The honey is wheeled direct on to the floor of the honey-house, the door being connected by a weight and pulley in such a manner that when the wheelbarrow strikes the door the weight begins to rise, and allows the door to swing open. As soon as the door is cleared the weight pulls the door shut. The honey is now on the wheelbarrow in the extracting-room ready for work. Usually three supers of eight frames each are wheeled in at a time—two in front and one behind. The frames are taken from the back super, uncapped and extracted, and returned to the wheelbarrow without removing the super. The top super is then extracted in the same manner and set back on the first super extracted, to make way to the last super of the load. In this manner the entire load is disposed of without lifting a single filled super. If more than one person is engaged in the extracting operations, two wheelbarrows may be used to keep a continual line of supers arriving and departing.

P. C. Chadwick's apiary, showing how the ground slopes down toward the honey-house, and then falls away abruptly behind the building—an ideal arrangement, considering general convenience.

The interior view shown gives an idea of the arrangement of the extracting equipment. The extractor needs no explanation. No. 3 is the uncapping-box, which, as may be seen, has a V-shaped bottom, the draining-screen fitting down into the box to the beginning of the V shape as shown by the

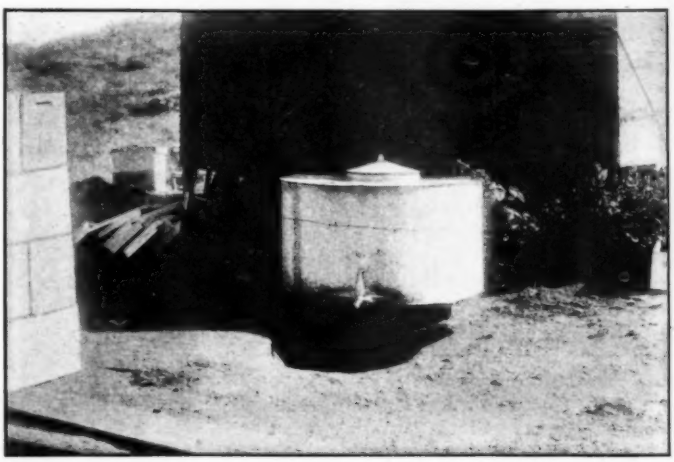


Interior of P. C. Chadwick's extracting-room. The capping-box, 3, has a V-shaped bottom, and is fitted with a screen as indicated by the line 4. The extractor and capping-box both drain into the strainer, 1, 2, from which the honey runs by gravity into the tank below.

dark line and Fig. 4. Board No. 5 fits across the uncapping-box at No. 6, where the notch may be seen for the further end, a like notch being on the near side. This board has in the center a cone-shaped hole, dug out with a gouge chisel to allow the end of a frame a support where it will not slip when uncapping, and also allow the frame to be reversed by simply turning it in the cone. In this way the frame may be reversed by a simple turn of the fingers of the supporting hand without even laying the knife down.

The stove may be plainly seen, No. 9 being the knife-pan with knives ready for use. The knives are in easy reach at all times. and may be exchanged quickly, and often enough to keep the caps coming off rapidly, and with little loss of time. When a frame is uncapped it is set into the extractor, and another taken from the wheelbarrow on the return to the uncapping-box. The wheelbarrow is supposed to stand close at hand. No. 7 is a rack to hold extra frames uncapped ahead of the extractor when help is being used to turn the extractor during a rush.

No. 8 is a water-pan filled with clean water to remove any honey from the hands or knives that may chance to be encountered. This pan I consider a very essential part of the equipment to insure cleanliness.



Rear view of Chadwick's extracting-house showing the large tank, and place for filling cans under the tank.

Nos. 1 and 2 are the strainer. On the bottom of frame No. 1 is nailed a galvanized screen wire of the finest mesh obtainable in common screening stock. This sets in frame No. 2, resting on a rabbeted edge, which leaves the wire two inches above the bottom of the frame. Frame No. 2 is covered with a heavy piece of tin into which is made a spout forming a large funnel which fits into the pipe leading to the tank below down thru the floor.

The tank may be seen in another picture. A pair of scales stands under the gate of the tank at a level which will support a sixty-pound can at the right height. The honey is drawn into the can until the beam goes up which is a sign there is a little more than sixty pounds of honey in the can. Now comes the first heavy lifting of the entire operation, as the can must be lifted into its case to be labeled 60 pounds net, and with its partner nailed up ready for the journey to the warehouse.

Redlands, Cal.

ADVANTAGES OF THE CENTRAL EXTRACTING-PLANT

A First-class Carrying-rack for an Automobile

BY W. H. CRAWFORD

By our plan honey from all the outyards is extracted at home, which reduces labor and expense to a minimum, and at the same time allows the beekeeper to be at home most of the time during the harvest. The honey-house is large, and equipped with an eight-frame power extractor, and 1½ H.P. engine, uncapping-can, two large honey-tanks, etc.

The honey is produced in full-depth eight-frame supers above queen-excluders, with seven combs spaced so as to fill all the space without using division-boards. Fifty extra supers are provided and filled with combs or full sheets of foundation before extracting begins. When the honey is ready to extract, as many supers filled with combs as will be needed to make a day's work are loaded on the auto and carried to the outyard. The hives that are ready to extract are located, and one super full of empty combs is placed near each hive so located. The combs in the empty supers are spaced, and an escape-board is put on top of each one of them. One man with a hive-tool pries loose and lifts up the super full of honey, when another man quickly places the empty super in its place and puts an escape-board on the empty super. The first man then sets the full super on top. The quilt and cover are adjusted so as to make the full super absolutely bee-proof so that robbers cannot get into it; for often they make mischief as soon as the bees desert it, if allowed to do so. Now we have a super full of empty combs between the full combs above and the brood-chamber below, so that the bees are escaped into the second story containing the empty combs, instead of into the brood-chamber. Hence not a moment of time is lost to the bees in storing honey in the super, which fact is very important.

The full supers are allowed to remain on the hives over night, giving time for the bees to desert them. Each day in going for the supers of honey, now ready to be carried to the honey-house, other empty supers of combs are carried along, and placed on other hives that are found ready to be extracted in the same manner as already described. Next the full supers now ready to be loaded are loaded on to the auto and taken to the honey-house at home. During this whole time, not a comb was taken out of a super nor a bee brushed off a comb.

The honey is extracted the same day that it is taken from the bees while it is yet warm; for if allowed to remain over a night after being taken off the hives it is twice as hard to uncap and extract.

By this method we have the same amount of empty combs and supers on hand all thru the season to be used as described above, and they certainly do yield as large profits as anything used in the production of extracted honey.

We work each yard once a week, picking out such hives as are ready to extract and passing over such as are not ready, for another week. Only one super at a time is given each colony; therefore it means the loss of quite a bit of honey to allow the full combs of ripe honey to remain on the hives after being finished.

For hauling the honey we use a platform on the automobile 5½ feet wide and 5½ feet long, made of boards 1 x 12 inches by 5½ feet long, cleated together with strips 2 x 2 inches by 5½ feet long, put together so as to make a solid floor. Three sides of it are provided with five rods ½ inch by 3 feet long to each side, both ends of them threaded and provided with nuts; also both ends of each rod are bent to a

right angle. One end of the rods passes thru holes made in the cleats on the sides of the frame and are fastened with the nuts in a way to allow the rods to turn around. Three flat bars of iron ½ inch thick by 1½ inches wide by 5½ feet long with five ½-inch holes in each of them are provided, and the other ends of the rods are fastened in them in a way so as to let them turn in them as the other ends turn in the cleats on the edges of the frame. These rods and bars make the sides of the frame and are fastened together at the top of each corner with a latch.

The rear seat of the automobile is taken off, and a small bed 3⅓ x 5 feet by 9 inches deep is made to fit on the car, reaching up flush with the top of the fenders of the rear wheels.

The frame described above fits snugly on top of the bed and the fenders of the machine, reaching two inches over the sides of the fenders.

While loading and unloading all three sides of the frame can be let down entirely out of the way by unlatching the corners and allowing the rods to turn half around like a crank, so that the sides of the frame are swinging straight down, entirely out of the way in every respect, leaving a nice smooth floor with not a single thing in the way in loading. Then, like turning a crank half around, the sides of the frame are elevated and fastened at the top corners and not a super can get away while being hauled to or from the outyards. This frame holds twelve eight-frame supers to the tier. We have hauled twenty full supers to the load and fifty supers of empty combs to the load.

Roswell, N. M.

CONCRETE WORK-SHOP, HONEY-HOUSE, AND BEE-CELLAR

337 Colonies Wintering Indoors

BY DAVID RUNNING

My building is 16 x 40 ft., outside measure, with a bee-cellar underneath, the ceiling of which is 2 feet below the surface of the ground. The entrance to the cellar is in a side hill. The honey-house and shop are on the main floor, and the second floor is a large storage room. The bridge shown [cover picture—ED.] drops down for loading and unloading honey or supplies. Notice the pump between the doors. We have plenty of water always at hand—a big help in keeping things clean.

David Running's 16 x 40-foot concrete building. The end view of this building and the entrance to the bee-cellar are shown on our cover.

The material in this building, including lumber and cement, cost only $206.75.

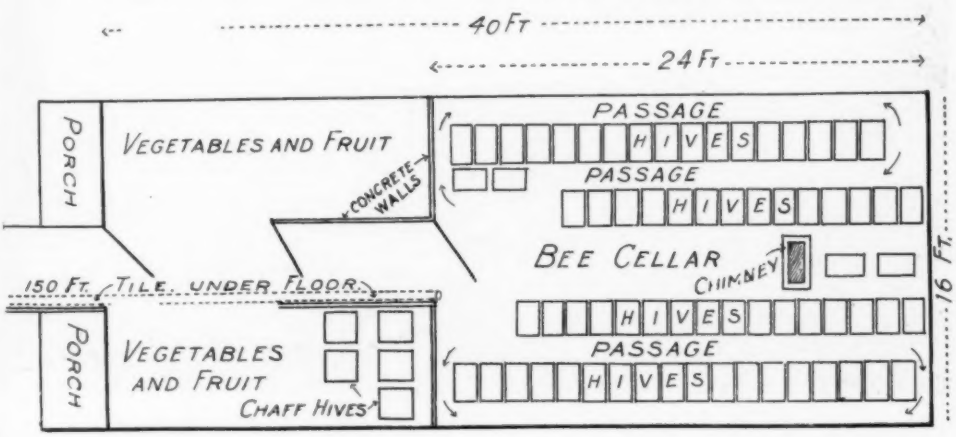
The building is 18 ft. high to eaves from cellar floor, and 25 ft. to peak. The chimney is 29 ft. high, with 9 x 13-inch flue opening at the cellar floor. I built this building myself, so I cannot give you the cost of labor, as it was done at odd times when I was not busy at beework. The total cost of material was $206.75, as follows:

Lumber and shingles	$103.38
Cement	64.81
Nails	3.92
Gravel	4.95
Bolts	2.26
Locks and hinges	1.60
Hooks	.16
Cedar sticks for overlays	4.75
Sash, windows	9.08
Brick	7.40
Tile	4.50
Total	$206.75

The walls are *six inches thick*. Concrete was made by mixing one part of cement to six parts of gravel. As many stones were put into the forms as possible without having the stones touch each other or come closer than ½ inch to the surface of the wall. This accounts for the small amount of cement used.

The door and window frames in the cellar were made of 2 x 6 oak plank, and hemlock was used for those above the ground.

The cellar ceiling joists were put in 6½ ft. from the floor, and covered with cheap lumber, one foot of dry sawdust placed on top, then an air space of about one foot, then another set of joists covered with matched flooring. The shop ceiling is 7½ ft. from the main floor with matched flooring above. The hip roof gives a large roomy upstairs for storeroom. The ceiling



over the vegetable-cellar in the front part is single floor without sawdust covering. This gives us a 9-ft. ceiling in the extracting-room above.

The temperature in the bee-cellar (when bees are in) remains between 45 and 49 degrees F. The outer vegetable-cellar stays about 6 degrees colder with the middle doors open as shown in the plan.

The bees are placed in the cellar in long tiers and piled five colonies high with 2 x 6-inch plank on edge underneath. There is just room for a small man to get around between the tiers, so all colonies can be inspected at any time except two piles (ten hives), behind the chimney. We have 312 colonies in the back or bee-cellar now, and 25 chaff hives in the front cellar (see drawing). The cellar is the best place for colonies in the regular chaff hives in this northern locality. We do not expect to lose a single colony of bees this present winter. Before putting the hives in the cellar all entrances are enlarged to 1¼ inches by the width of the hive by inserting two wedges between the sides of the hive and the bottom-board. The cellar is always so dry that we can light a match (the eight-day kind) on the floor or walls at any time. We have wintered colonies (nuclei) in this cellar when the bees filled only the space between two combs. When putting bees in, also when taking them out, the cellar is kept full of smoke; but no smoke is used on the individual colonies. This is our twelfth winter for using this cellar; and since we learned how to prepare our bees for winter (about nine years ago) our winter loss has been less than one per cent. All covers are left sealed on in the cellar, and are *not loosened before fruit bloom in spring.*

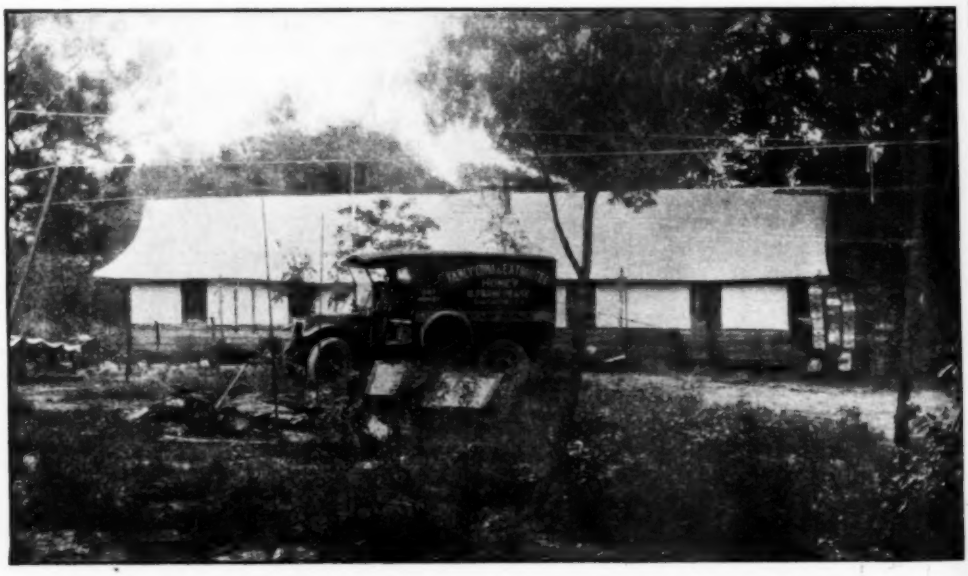
Filion, Mich.

A COMFORTABLE WORK-TENT

BY G. FRANK PEASE

The tent shown in the illustration is my living-tent, containing four rooms and a screened-in gallery. The floors and side walls are of wood, having two windows for every room, that swing in, and screens for each. This tent is one of seven, and is as comfortable as a wooden house.

The automobile, a Studebaker, has been driven nearly 5000 miles in eight months, with less than ten dollars for repair bill. It has carried heavy loads nearly half the distance. I have drawn about 400 colonies of bees, a carload of bee supplies, lumber, wire fence, hogs, goats, and even a horse, besides hauling all my supers and honey from yard to yard. It will hold 36 colonies



G. Frank Pease's work-tent, auto truck, and solar extractors at his Louisiana location.

at one load, and is indispensable for handling the twelve apiaries scattered in a thirty-mile circle.

I find that it is cheaper to bring all honey to the home central yard to extract than to move extractors, etc., from yard to yard, because the honey has to be hauled to market anyhow, and it is just as well to carry back empty supers as to go empty; besides, it saves building extracting-houses at all yards.

The solar extractors shown are home-made, and melt cappings in a short time, and the wax is hot enough to run into cakes.

Michigan.

WHY I PREFER THE HOUSE-APIARY

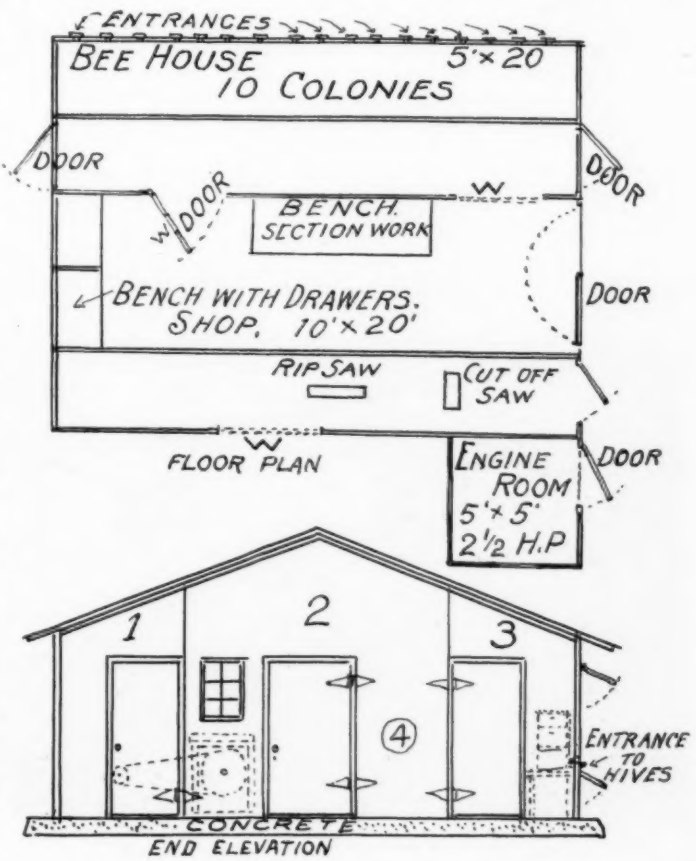
BY E. C. BARBER

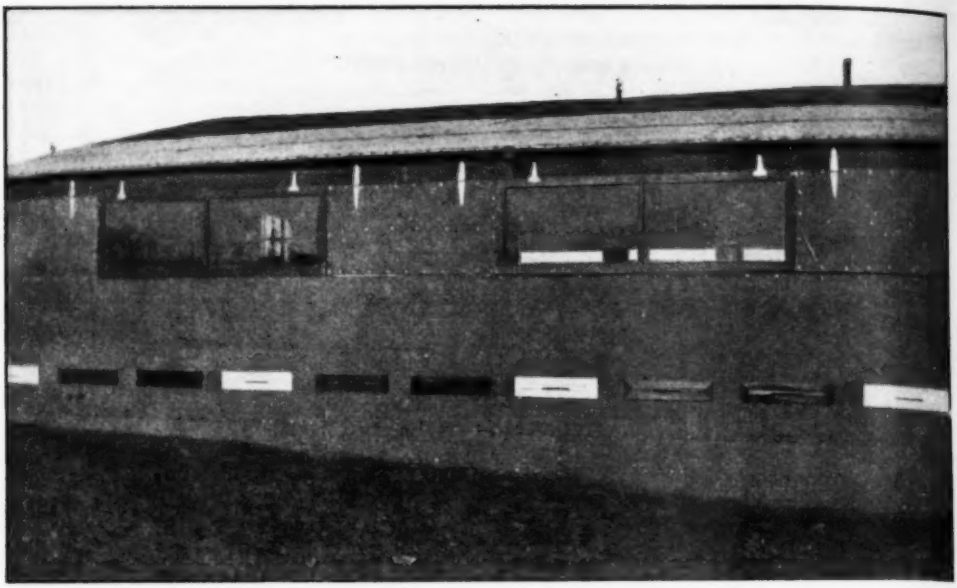
The drawings show the front and floor views of my shop, honey-house, engine-room, and house-apiary. No. 2 in the sketch shows the shop, which is 10 x 20 ft., and has a concrete floor. No. 1 shows the engine-room, 5 x 5 feet, which has a 2½-horse-power engine.

The work-bench is clearly shown. This is three feet wide, and runs the length of the shop. In this bench there is a cross-timber, half way from the floor to the top of the bench, where my shafting hangers are bolted. The belt from the gas-engine runs thru two small holes thru the side of the building into the shop. There are two circular saws, one a cutoff, and one a rip saw.

The other bench I use for section work only. There is also a bench at the end containing eight drawers, where I keep foundation, sections, etc. The shop has four windows and two doors, one of which leads from the shop into the house-apiary.

The house-apiary is an addition built on to the south side of the shop. This building is 5 ft. wide, 20 long, and 7 high at eaves, 9 ft. at the side of the shop, containing a hive-bench 20 inches high and 24 inches wide. On top of this bench there are two sheets of galvanized iron 10 ft. long and 24 inches wide, on which my hive-bottom boards rest. I use the wide space of the bottom-board the year round. The front ends of these boards are placed tight against the side of the apiary-house. The opening thru the building is cut the full size of the entrance of the bottom-board. I place the hive on the bottom-board, which leaves two inches of the front of the bottom-board, which I cover with a piece of wood 2 inches wide and as long as the hive is wide. The hives are placed between 7 and 8 inches apart. The entrances on the outside have a two-inch frame all around them. These



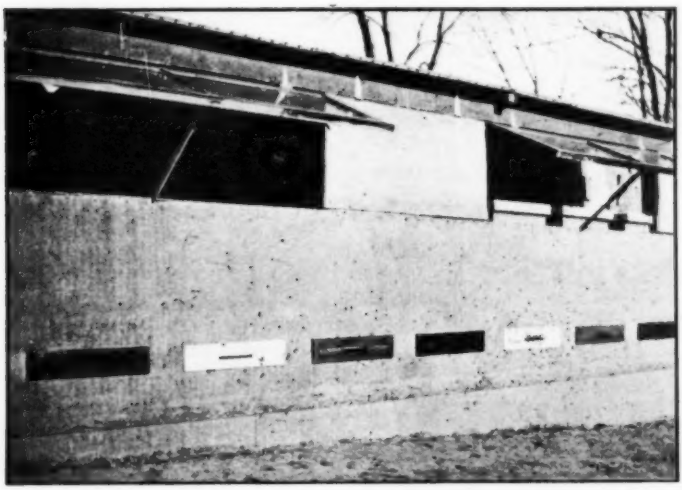


Addition built on the south side of E. C. Barber's shop, 20 feet long and 5 feet wide. It is covered with two-ply paper, granite finish. Cost for material and labor, $22.50. Ten colonies are being wintered inside this building, temperature 45 to 50 F. In hot weather the side can be opened to give plenty of ventilation. There is also a door in each end.

are painted different colors—red, white, and green, alternately.

Just under these entrances is an alighting-board 12 inches wide and the length of the building. This is set at an angle of 45 degrees with the side of the building. This alighting-board was placed after the photos were taken.

There are two long windows and three doors. These swing out at any angle desired, to admit air circulating in extremely hot weather. They also give light when working with the bees. The bottoms of these windows are placed 24 inches above the entrances and alighting-board, which is about the same height as the hive with two supers on. These windows can be opened and closed from the inside of the house. There is also a door at each end. These can be opened for ventilation in very hot weather. A hinged door, 20 inches wide, is fastened on to the back of the hive-stand. The door swings up back of the hive-stand, and is used for the purpose of holding planer - shavings in packing bees for the winter, giving a space of 2 inches in front of the hives, and about three inches in back, and seven inches between each two hives.

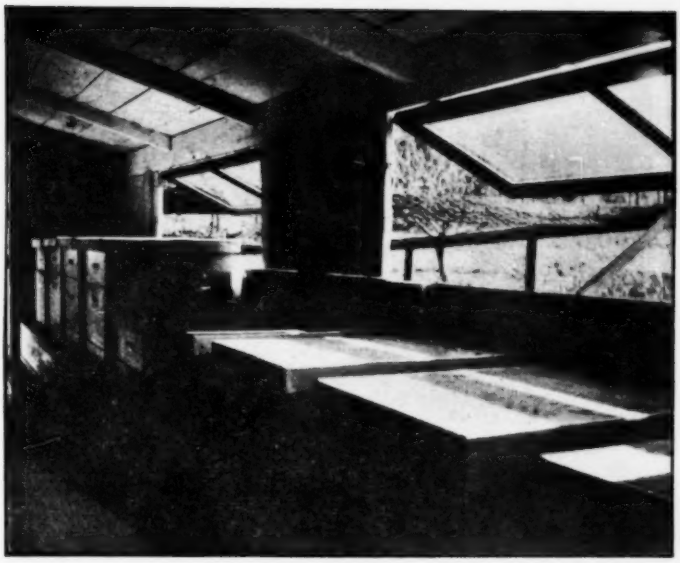


Close view of Barber's house-apiary, with ventilators open.

In the spring this door is unhooked and swung down so that the edge comes even with the floor, and the shavings on the galvanized iron can be removed very easily. The interiors of these buildings are painted with two coats of

white paint, and the exteriors are covered with two-ply granite-finish roofing-paper. The frames are 2 by 4, covered with hemlock boards planed on the inside so that they can be painted easily.

I prefer the house apiary instead of the outside yard for several reasons. First, you can work at your bees and not be among those flying in the air, especially if the windows in the house are closed. What few bees fly from any hive you are working on inside of the house, instead of trying to frighten or sting you will fly to the window to get out. Second, you do not have to carry the hives in and out of the cellar in the spring and fall, or move them to their winter quarters. Third, your bees are always protected from the snow, rain, and winds. Fourth, they are at leisure for a flight in the winter any time when it is warm enough, such as the past few days have been, when the thermometer was around 70. Fifth, in this house-apiary I can see a big difference in spring brood-rearing; also protection during cold nights, when bees are working in sections during the summer.



Bees wintering in a house apiary.

I cannot see that my bees make mistakes in finding the entrance to their own home. I think it is due to the different colors

E. C. Barber's apiary out of doors.

Class in beekeeping at the Rural C

with which I have painted my entrances. I can feed my bees in early spring or late fall and not have any robbing going on, because I feed inside the house with an empty super on top of the hive, with five-pound honey-cans with covers perforated. I do not have as much robbing and trouble with the bees in the house as I do with those that are in the yard apiary. The bees which are in the house seem to be much further advanced at the beginning of the honey-flow than those in the yards, especially in bees and brood.

I get more honey from bees in the house than I do from those in the yard. I think it is due to the protection of the house in cold nights. I have found at midnight that the bees outdoors which were working in sections during the day were not building comb in the sections, due to the nights being too cold, while those in the house were as busy as any bees could be.

I intend to build another house, which will be 40 by 7 ft., with one side to the east and one to the west, with two rows of hives the whole length, one on each side. This house will hold 40 colonies. I shall not change the plans of the hive-stand, windows, and entrances, because I like this design very much.

The expense of a structure like this will not be as much in the long run as hives, winter cases, shavings, building-paper, packing-quilts, or double-walled hives, and the extra labor it takes to care for the bees in winter and spring.

Framingham, Mass.

SIXTH ANNUAL APICULTURAL SHORT COURSE IN ONTARIO

BY MORLEY PETTIT

This short course was held at the Ontario Agricultural College, Guelph, January 11 to 22, 1916.

Owing to war conditions a large attendance was not anticipated. On the opening day, however, there was an attendance of twenty-seven (later increased to thirty-five) young men and a few ladies. Practically every one of these had been previously engaged in beekeeping. They included beekeepers owning one hundred or more colonies, sons of successful beekeepers, and in one case a beekeeper's hired man. Many different parts of Ontario were represented, also Quebec and the State of Michigan. The get-together spirit was much in evidence, and the interest shown at all the lectures was very gratifying.

It is the purpose of this course to give the underlying principles of bee nature, a knowledge of which is essential to successful bee management. Fifty-nine lectures and demonstrations were given, covering the different phases of beekeeping. Typewritten copies of each lecture outline were distributed to the class so the main points could be followed closely and carried home for future reference. As far as possible the lectures were illustrated with stereopticon views and the actual objects under discussion. Members of the class were also given laboratory practice in hive construction, and a visit was made to the apiary of a successful beekeeper in the neighborhood of the college.

One important feature of the work was

t the ...ral College, Guelph, Ontario.

the display of apiarian apparatus and implements. The educational value of this was clearly demonstrated by the keen interest shown by those present.

In conducting this course, the Provincial Apiarist, Mr. Morley Pettit, was assisted by F. W. L. Sladen, Apiculturist, Central Experimental Farm, Ottawa; F. E. Millen, B.S.A., Lecturer in Apiculture, and State Inspector of Apiaries for Michigan; F. W. Krouse, President of the Ontario Beekeepers' Association; James Armstrong, Selkirk, Vice-president of the Ontario Beekeepers' Association; also some of the apiary inspectors of Ontario. Lectures on allied subjects were given by other members of the college staff. Mr. Frank C. Pellett, State Apiarist of Iowa, paid the class a visit, and lectured on beekeeping conditions in his state.

Throughout the course there were many kind words of appreciation by members of the class, and on the last day a vote of thanks was tendered Mr. Pettit and the other instructors for the valuable information received and the systematic arrangement of the work.

It is proposed to hold a summer school for beekeepers at the Ontario Agricultural College some time in June, when bees are active and apiary practice will be possible. Persons interested should write at once for particulars to Morley Pettit, Provincial Apiarist, Guelph, Ontario.

COMPLETE SPECIFICATIONS FOR A 12 BY 24-FOOT BUILDING

BY HERBERT LYON

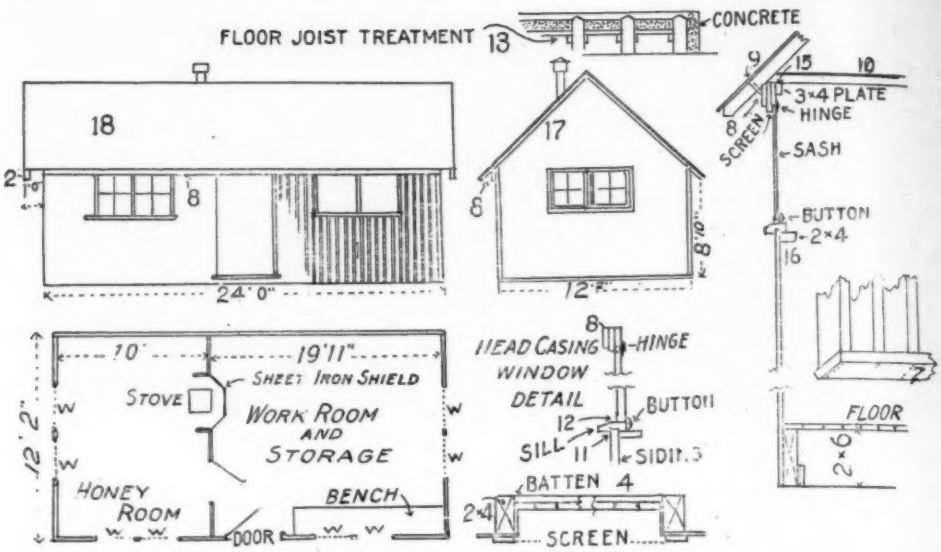
This design is for a building 12 x 24 feet, and 8 feet from bottom of joists to top of plate. The floor joists are 2 x 6 inches and 11 feet 8 inches long, laid 16 inches from center to center. Two 2 x 6-inch by 24 feet spiked to the ends of the joists complete the floor frame. (See No. 7 in the illustration.) A 4 x 6-inch by 24-ft. girder properly supported lengthwise under the center of the frame should be used.

The plates are of 3 x 4-inch material halved together at the corners, and placed 8 feet from the bottom of the floor joists to the top of the plate. (See No. 15.)

Two 2 x 4-inch door studs (No. 4) extend from the top of the floor joists to the bottom of the plate (2 feet 10 inches between studs). A 2 x 4-inch level with the under side of the window sill (No. 16) extends from the outside of one door-stud around the building and finishes against the second stud. Corner posts and braces can be used or may be dispensed with. The siding is 1 x 10 inches, 16 feet long, matched barn boards, laid vertically. The joints can be covered by $\frac{3}{8}$ x 1$\frac{1}{2}$-inch battens, painted a contrasting color and applied after the siding is painted.

The outside door and window casings are of 1 x 4-inch white pine or cypress set back from the edge to form a rebate for screens. Run a 1 x 6-inch facia along the long sides of the building, the top edge of which is even with the top of the plate. This will form the head casing for windows and door.

The rafters are 2 x 4-inch, placed 16 inches from center to center, 8 inches to 1 foot pitch. These should be notched over the facia and seated on the top edge of the facia ends of siding and plate.



Sheath the roof with North Carolina pine roofers. Cut the ends an even foot beyond the siding. Cover the sheathing-boards with rubberoid roofing.

Cut window openings ½ inch less than the size of the sash on sides and top. Allow for sill at the bottom. Note the plowing necessary to receive the siding. (No. 11.)

The windows are four light barn sash, 2 x 2 feet 8 inches, hinged at the top, and rabbeted at the bottom to receive a lip in the sill. They should be cased in the sides and top with stock the same thickness as the sash. If the house is built over a bee-cellar it would be well to lay a double floor, the under one diagonal. If desired, a concrete floor can be laid, but I do not recommend it.

Build a board partition to separate the rooms. An opening can be made to admit a stove. Protect all woodwork near by with sheet asbestos. A movable sheet-iron shield can be used to shut off either room when heat is wanted in only one room. Use galvanized-iron funnel for chimney.

Mount Kisco, N. Y.

AN EXTRACTING-HOUSE ON WHEELS

BY T. E. HOLMES

One of the great problems that confront the apiarist who has his bees in outyards run for extracted honey is an economical extracting-outfit. Some erect a building at each yard, and haul the equipment from yard to yard. The more yards you have, the more expensive this plan becomes.

I have visited beekeepers, read articles on this subject, and have come to the conclusion that a portable extracting-outfit is the only feasible solution of the problem. The one that is the subject of this article is 16 ft. long, 8 ft. wide, and 6 ft. high. The framework consists of two-by-fours covered with a light canvas. The extractor is an eight-framer, run by a gasoline-engine, both being placed clear to the front end, leaving no vacant space. The extractor is in the left-hand corner, and the engine sits directly over the front axle of the wagon, where it is evenly balanced.

The extractor is placed on the floor. A pipe runs from the gate of the extractor thru the floor, and then to a tank outside. This does away with all handling of honey while the extracting is going on.

The engine is a 2½-horse-power Stover. It is larger than necessary, but it is run at a low rate of speed, and consequently the vibration is reduced to a minimum.

We use steam uncapping-knives.

In regard to an uncapping-box, we have solved the problem to my entire satisfaction. To my knowledge it is the only one in use; and if it appeals to any in the beekeeping fraternity they are perfectly welcome to use it. It is simply three or more trays made any length and width most convenient. The trays used in this outfit are made of 1 x 6-inch boards, two feet wide and three feet long. Heavy wire is nailed on the bottom and then a sheet of

tin with thin strips between the screen and tin. This is to give a clear space for the honey to run to the lower end, where a bucket is placed to receive it. The cappings can be only six inches thick in each tray. With such a thin layer, practically all the honey drains out over night. When one tray is filled, another is placed directly on top of the filled one. When not using the steam-knife, the blade is shoved into the cappings where the steam helps to warm the honey so it drains faster. I had only about ten gallons of honey left in the cappings, which yielded 200 pounds of beeswax.

This outfit is owned jointly by Messrs. Koger, Biddick, and myself. With it we extracted twelve different yards twice.

Meridian, Idaho.

[A year or so ago some one suggested the use of capping-trays somewhat similar to those described by our correspondent. We felt at the time that the idea was sound; but to our knowledge no one else has tried it.

Is there any objection to the plan? If so, we do not see it. Such trays would be easy to make, and inexpensive. If a beekeeper found that he did not have capacity enough, he could simply make a few more trays. We hope more of our readers will try these trays, and report.—ED.]

AN ELEVATOR IN THE HONEY-HOUSE

BY A. N. CLARK

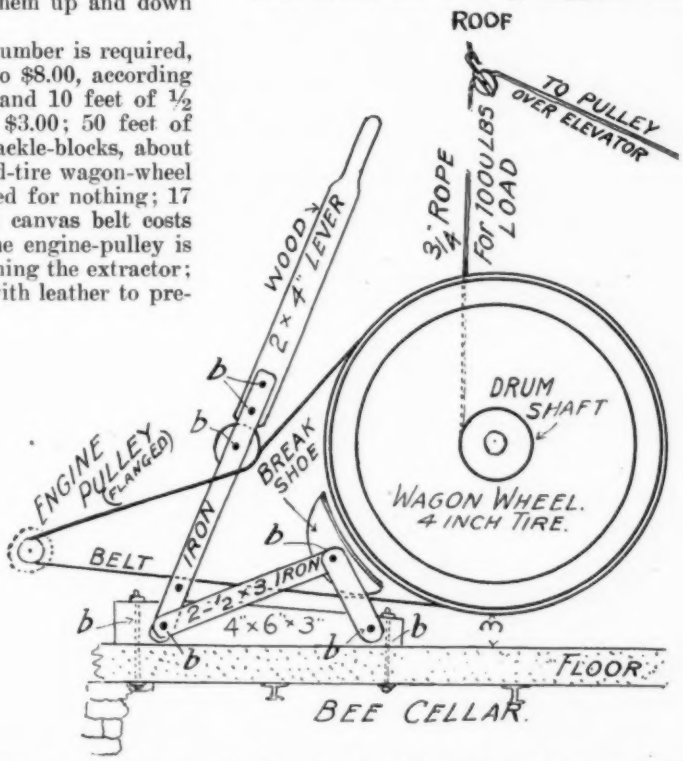
I have recently designed a freight elevator for a beekeeping friend who stores his empty hives, supers, combs, etc., on the second floor of his building, and has found it a laborious task to carry them up and down stairs each season.

Less than 200 feet of lumber is required, which would cost $2.00 to $8.00, according to location; nails, bolts, and 10 feet of ½ x 3-inch iron bar, about $3.00; 50 feet of ¾-inch rope and three tackle-blocks, about $2.75. A discarded broad-tire wagon-wheel can sometimes be procured for nothing; 17 feet of four-ply stitched canvas belt costs about $2.00, and the same engine-pulley is used that is used for running the extractor; but it should be lagged with leather to prevent excessive slipping, and flanged. Total cost of materials will range from $10 to $15.

The sketch shows the end of rope attached directly to the bail of the elevator, which answers the purpose of lifting light loads like empty hives; but if used for hoisting cases of honey and other heavy materials it is better to attach a tackle-block to the bail, and hitch the end of the rope to a rafter or beam overhead. Such a hitch requires more rope, but develops more power and moves only half as fast. Cutting down on the speed is desirable, as with a high-speed engine of, say, 500 revolutions, the elevator would run about 40 ft. per minute with the direct hitch.

Lansing, Mich.

[Our artist, Mr. Murray, suggests that



the elevator could just as well be arranged to run down into the basement in case bees are wintered in the cellar; accordingly he made the drawing to show this feature.—ED.]

THE WINDOWS OF THE HONEY-HOUSE

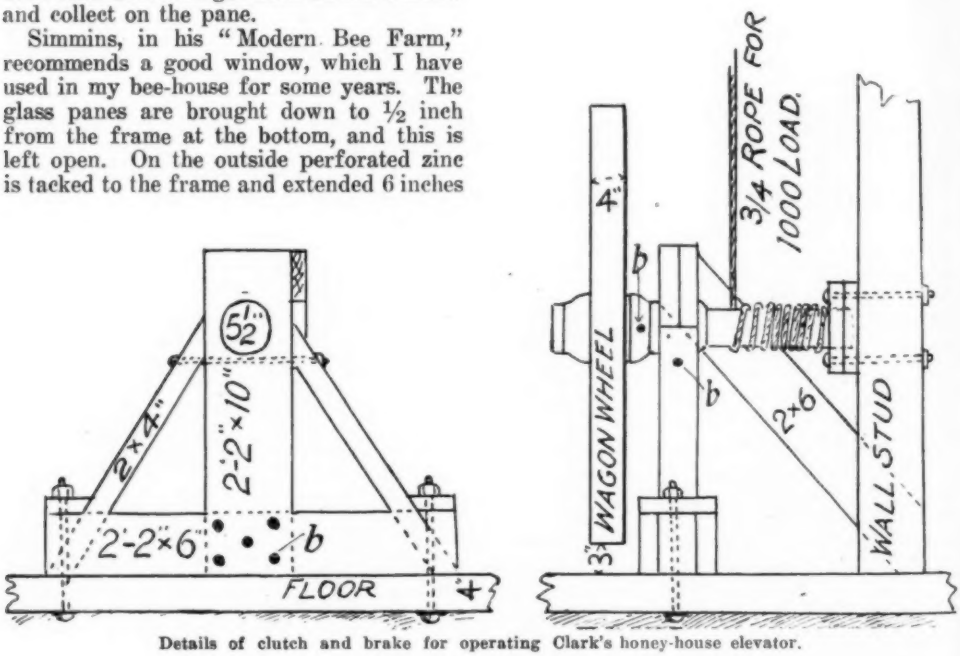
BY B. BLACKBOURNE

An important part of the honey-house is the window; and altho by the superficial observer it may be dismissed with scant consideration, a little thought spent upon this one item alone when planning a honey-house will be amply repaid by the convenience afforded later.

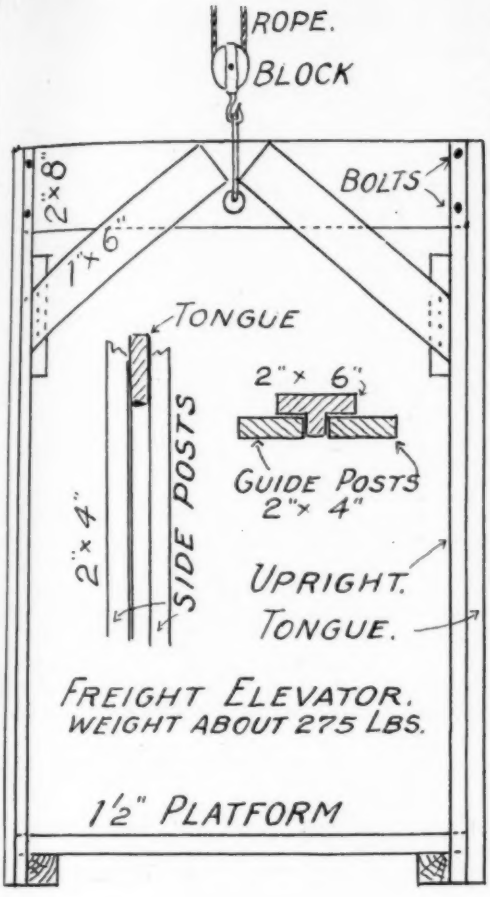
Before discussing different types of windows especially suitable for honey-houses, let us consider what are the particular requirements of such windows. These are, to admit light; to admit air without allowing bees to enter; to clear the honey-house of bees trying to get out, *without admitting those attempting to get in.*

The usual method employed is by the use of wire cloth. This is tacked outside the window, and bee-escapes are fitted at the top corners or else the wire cloth is carried six inches above the opening, and the upper border held out a quarter of an inch as suggested in Dr. Phillips' "Beekeeping." In both these methods it is necessary for the window to be open; and unless Dr. Phillips' sliding sash is used the bees are likely to collect on the window-pane, and many will not find their way to the wire cloth at all. The ordinary sash window is certain to be a nuisance, and a casement window cannot be used unless it is made to open inward, which is inconvenient, and even then bees will get back of the window and collect on the pane.

Simmins, in his "Modern Bee Farm," recommends a good window, which I have used in my bee-house for some years. The glass panes are brought down to ½ inch from the frame at the bottom, and this is left open. On the outside perforated zinc is tacked to the frame and extended 6 inches up the front, and ⅜ inch from the glass. The bees fly against the window, fall down, pass thru the opening, crawl up the zinc, and escape. During a honey-flow bees escape well by this method; but if a sudden check comes while one is extracting, or while there is honey in the house, the bees scent it from the outside, and in a comparatively short time find their way down the zinc and into the house. Wasps frequently lead the way, as they are very much quicker than bees in finding an opening; but once the bees have found the way in they don't forget it in a hurry. Very soon the whole apiary is in an uproar; bees inside pass the stolen honey thru the zinc to those outside, and, owing to the hundreds inside buzzing up and down the windows, clusters very soon collect in the top corners. Owing to this trouble I made removable strips of wood with which to close the openings during extracting time, or while I had honey in the house. Then there was the trouble of getting the clusters of bees out in the evening. With this style of window, too, there is another danger. When handling queens in the house it is quite possible to lose the queen, owing to a momentary carelessness, and she will very likely get out before she can be caught. Then, too, the window cannot be opened for ventilation.



Details of clutch and brake for operating Clark's honey-house elevator.

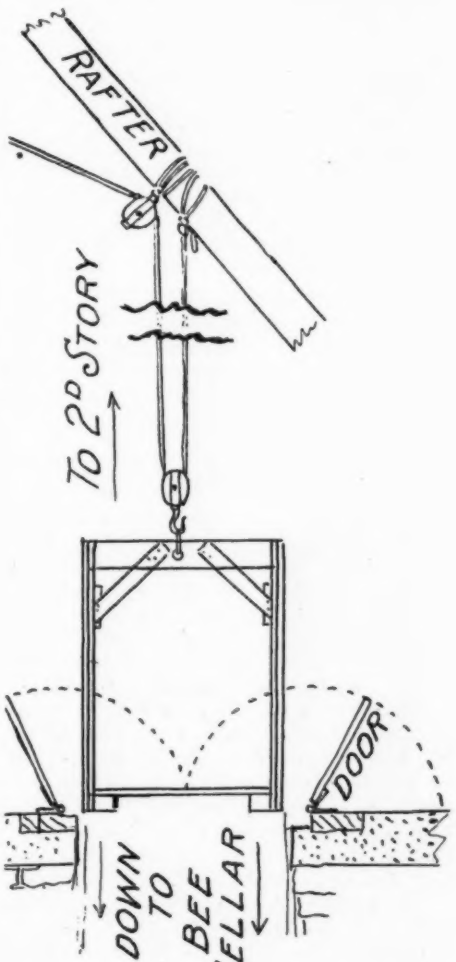


I have found (and other beekeepers have remarked on it in GLEANINGS) that it is a mistake to allow bees unavoidably carried into the bee-house, or that have entered by the door, to return at once to their hives. One such bee returning full of stolen honey to its hive when no honey flow is on will set the whole apiary in an uproar; thousands of bees will be buzzing around the windows and door, trying to get into each other's hives, so that robbing may be started. It is, therefore, a better plan to retain all such bees in the house, where they will cluster on the windows, and some expeditious method is required of turning them out in the evening.

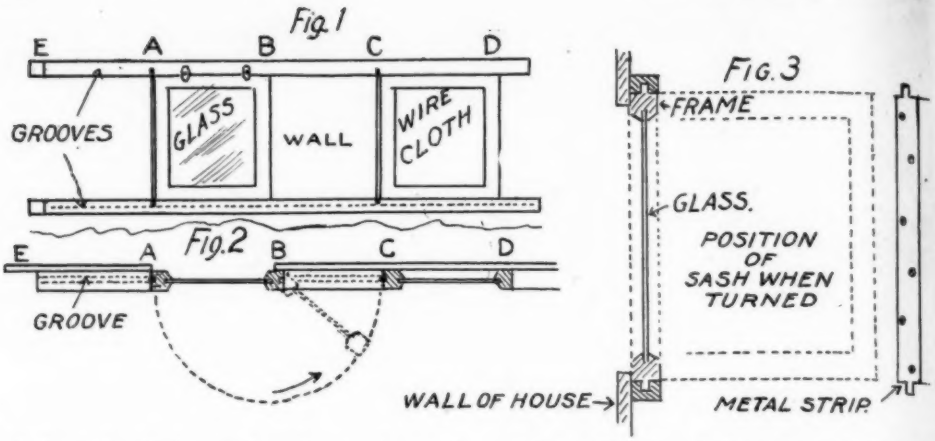
Mr. Isaac Hopkins' suggestion for the honey-house window is a good one—viz., that the window shall be hung centrally, so that with half a turn it can be reversed. Bees usually collect and cluster in one of the top corners. One turn, and the whole lot are outside; and, even supposing any are trying to get in, there is very little chance of their doing so when the operation can be carried out so quickly. The disadvantage of this window is that it must be kept closed, as wire cloth cannot be fixed outside.

Some beekeepers, I believe, advocate openings for ventilation covered with wire cloth, quite apart from the windows, to admit light. If, then, a few bees collect inside, the window can be opened momentarily to let them out without danger from stray bees outside getting in, which bees will be busy around the ventilation openings. But this means more expense and complication in the building itself.

I have devised a window which I think fits the bill exactly, altho I have not yet had the opportunity of testing it. The



Artist Murray's suggestion of letting the elevator in A. N. Clark's honey-house run down into the bee-cellar.



window should be made of one sheet of glass in a frame of good thickness (this to allow ample room for bees to cluster inside the frame against the pane), and hung from one side like a casement window; but instead of using hinges a flat piece of iron of the same width as the thickness of the frame is screwed on, this iron projecting an inch or two above and below the frame, and rounded. The projecting portions slide in grooves cut in a length of wood nailed above and below the opening. Fig. 1 shows the window in position. The bees collect inside. All that is necessary to turn them out is to slide the window along to the position BC, so that the back part moves from A to B, and swing the window around on the point now at B—see No. 2. A similar frame should be made for the wire cloth for use in warm weather. Always slide the window along before swinging around, then there will be no danger of crushing bees before the window is in its new position. When ventilation is needed, slide the window along to position EA, and wire-cloth frame to position AB, and manipulate as before.

Hoo, Minster, Ramsgate, Eng.

A SIDE-HILL HONEY-HOUSE

Three and One-half Feet Difference in Floor Levels of the Two Rooms

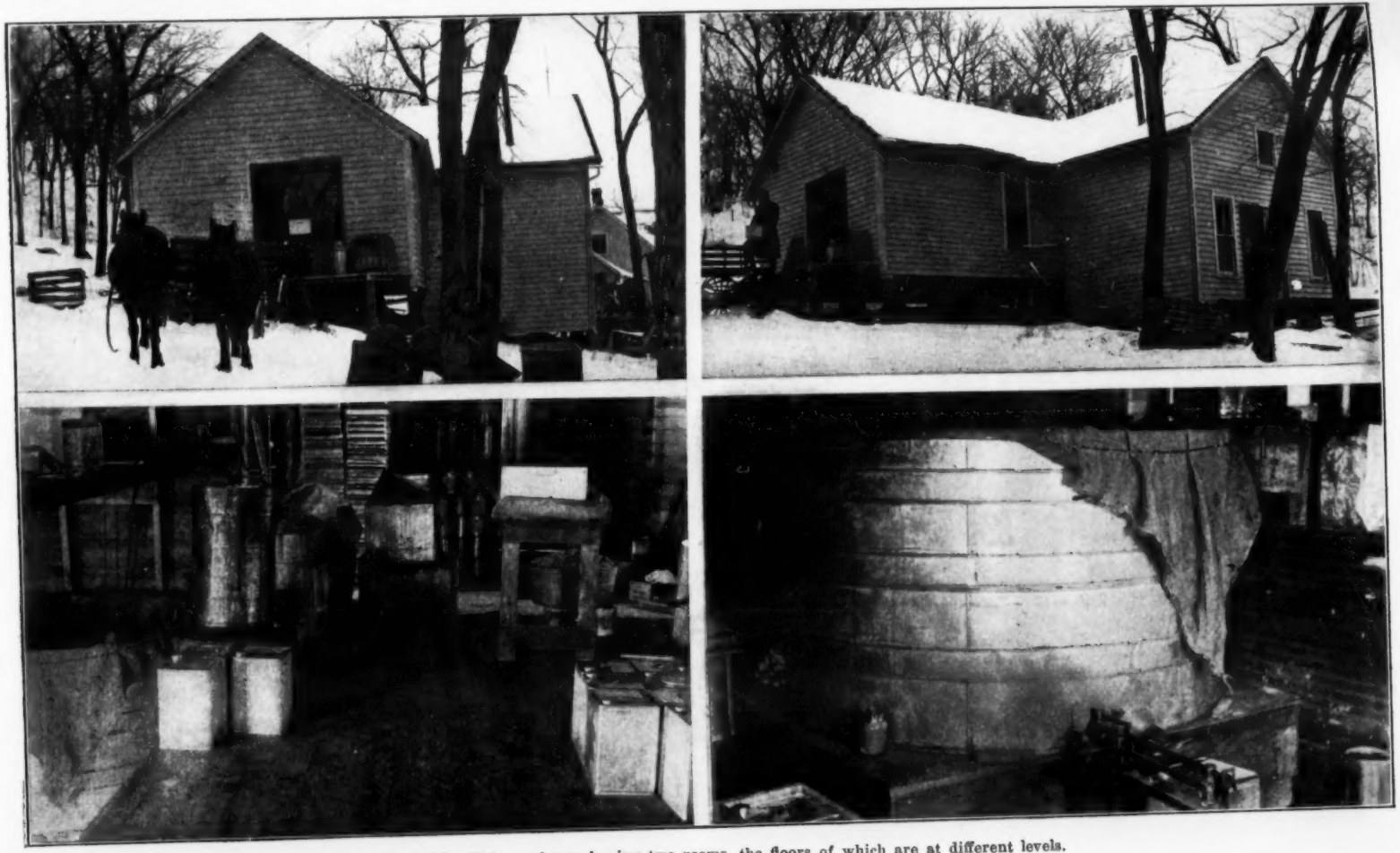
BY E. S. MILES

Our honey-house is located on ground sloping considerably, about 3½ ft. drop in 16 ft. The main room, which opens to the southwest, as shown in the first view, is 16 x 48 ft., with sides 9 ft. high. The addition, or ell, is 12 x 18 ft., with 12-ft. sides. The roof of the whole building is level; but the floor of the ell is 3 ft. 6 inches lower than the floor of the main room. The trees shown at the left are well back toward the other end of the building, and some of them are 100 feet or more from the far end, so that we have a place for our home apiary well away, and partially behind the building from the platform where we load and unload, as shown. There is a door also in the back for use in working with the home bees.

The third picture shows a part of the main room facing the door. The door is closed, and does not show in this picture, but is directly on the other side of the work-table, with the full-depth super upon it. This cut shows about one-half the width of the main room. The part to the right, not shown, is piled full of supers. At extracting time the space occupied by the piles of bottom-boards, and the 10-lb. pails, is used to store the filled extracting-supers as brought in while extracting.

There is also a window in the main room, which does not show in the picture, between the extractor and the piles of bottom-boards, which, when uncovered, gives ample light for uncapping. It is covered in the picture, as it let in too much light to show some of the other articles properly. The honey-tank, which is 36 inches high, holds 4800 lbs.

A rope may be seen behind the tank in the third picture, which is attached to the wall at one end, and runs down thru a pulley attached to the platform on which the tank rests, and up and around a windlass attached to the wall, so that, when the honey gets low in the tank, it can be tilted up toward the front so as to expedite the emptying.



E. S. Miles' side-hill honey-house having two rooms, the floors of which are at different levels.

A floor can be seen at the left, about three feet above the tank, on which can be noticed some pasteboard boxes. This floor is in the ell, and makes a loft that opens into the main room, and is up about 4½ feet from the floor of the main room. It makes a convenient storeroom for the almost innumerable articles connected with a well-equipped bee business that are used only occasionally.

The end of the main room at our back, as we face the third view, is equipped with a full window in the center, and the door before mentioned; also a half-window on the side near the door. We have a table in front of the window, where the section honey, mostly from the home yard, is sorted, scraped, and graded. It is then set on covers, or escape-boards, and transferred to the floor near the tank and extractor.

At the right, and back, as we face the last picture, are steps ascending to the main floor; and across the side of the ell opposite the tank is the workbench for all carpenter work necessary. At this bench we nail the shipping-cases and case the section honey, while the extracted, when filled into the cans or pails, is usually set back on the main floor, to be cased up and loaded from the door.

From the above, it will be seen that we have a honey-house with a door handy for use with the home yard, and also two doors with platforms of suitable heights to load wagons without lifting, on the two ends furthest from the beeyard so that, in going and coming in outyard work, we have little trouble from bees. It is made with four 4 x 6 sills set on substantial posts, resting on concrete blocks, with 2x6 joists 16 inches apart, and yellow or hard pine flooring.

The sides of the building are of 2 x 4 studding, 24 inches apart, boarded with shiplap, then papered and sided with regular 6-inch house siding. The roof is made of 2 x 4 rafters, 24 inches apart, sheating and shingles. It is bee, fly, and mouse proof. I don't remember the cost; but I think the material was about $300, or may be a trifle more. We built it ourselves, and the bees paid us our wages as well as for all the material and all that's in it and the ground it stands on.

A building this size will handle the crop from 300 colonies without serious crowding. By using a cheap shed for empty supers it could be made to handle the crop from 300 to 500 colonies.

Dunlap, Iowa.

Novel arrangement of work-shop as used by H. B. Phillips, Auburn, Me. Photographed by Inez A. Beals, Lewiston, Me.

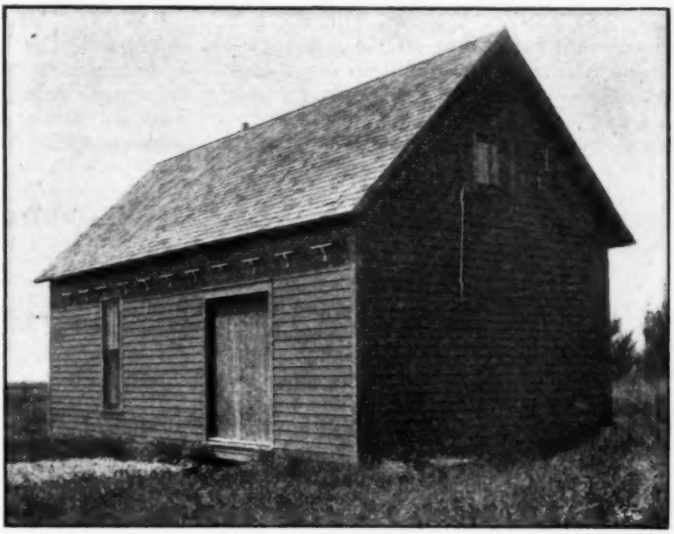
SOME ADVANTAGES AND DISADVANTAGES OF A HOUSE-APIARY

BY BENJAMIN C. AUTEN

To keep colonies of bees in a house-apiary, one precaution is absolutely necessary—the passageways from the hives to the open air must be bee-tight, and carefully maintained so. This makes it necessary to nail the hives firmly to the floor, and to nail solidly any part of the passageway liable to get dislodged. Even a careful explanation of the reasons might not be convincing; but a trial of a carelessly constructed bee-passage will be.

There are some advantages in keeping bees indoors. They are less excitable to work with than out of doors, apparently not considering the opening of the hive much of an intrusion. On the other hand, they are not easy to get away from in case they do stampede. Another advantage is, they can be worked with in all kinds of weather, thus permitting the utilization of time that otherwise might be unavoidable. Another, high winds do not scatter the hives in pieces over the prairie.

There are a good many disadvantages, however, some of them perhaps trivial; but even trivial disadvantages have great weight when an operator has an overburden of other difficulties. Entrance manipulations are largely barred, as the outside opening must be at some considerable distance from the hive, the hive of necessity standing back some distance from the inside of the wall to give opportunity for handling supers, etc.



B. C. Auten's house apiary, showing the hive entrances just under the eaves.

All young bees falling off the frames indoors are irretrievably lost. That may be the case also in outdoor handling; but the loss is not noticed, if it occurs, as the lost bees crawl out of sight at once.

It is next to impossible to hive a swarm indoors, as the bees take up their quarters

A close view of the entrances, with the bees clustering out.

mainly on the outside of the hive. If the hive is taken out of doors to hive the swarm in it, it is then a decidedly nasty job to get the hive placed in position indoors with the bees in it, partly because a large part of them will not be in it even then.

With bees kept in a building, unless the entrances are at a considerable distance from one another, the bees will mix from hive to adjoining hive on the outside wall of the building, then all go into the stronger hive, thus draining the weaker hives.

I had my bees several years indoors, and about two years out. Now that they are out, sometimes I wish they were back in; but when they were in I wished most of the time that they were out. One reason for wishing them inside is, I would not have to worry about marauders interfering with them, and perhaps leaving the hives torn up in winter time when the bees might perish from my being ignorant of their distress.

Carthage, Mo.

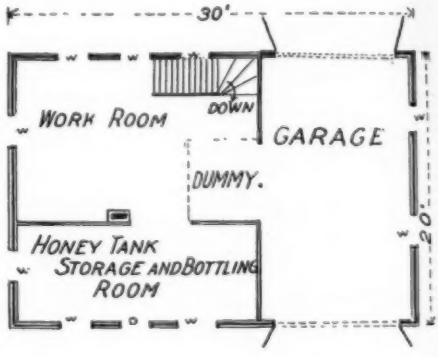
[Mr. Barber has overcome the tendency of the bees to mistake their entrances, and he also provides large windows so that those that get inside the building can find their way out. See his article, page 193.—Ed.]

GARAGE AND HONEY-HOUSE COMBINED

BY HENRY HOGRAVE

I am contemplating building a honey-house in the near future according to the plan shown herewith. This, when completed, I hope will save me much time and labor.

As you will observe, I have a garage in the same building; and as my yard is directly north of it with rows of ten hives on either side of a center driveway thru the entire apiary, I can run the auto into the yard, load up, and take it to the honey-house.



The dummy (platform) located next to the garage is another feature of the plan which will do away with much heavy lifting when the full supers are brought in for extracting, or the bees are brought in for their winter's rest in the cellar of the house.

The extracting-room will be located on the second floor, part of which floor will also be used for storing supers during the winter months. The honey-tanks, bottling, and honey-storage rooms, as well as the workroom, will be on the ground floor, being convenient for loading honey to be delivered, or receiving freight, etc.

Waukesha, Wis.

A DEMOUNTABLE EXTRACTING-HOUSE SUITABLE FOR A HOT CLIMATE

BY JOSEPH GRAY

In this locality we have to consider heat as the big factor, and plan accordingly. All our hives are set north and south, with the ramada (shelter or shed made of branches) running east and west. The extracting-house is set at the east end because the evening sun is hottest at the west end of the ramada, which is shaded to protect

the hives. For the same reason our house is screened on the north, and closed solid on the south. The doors are solid instead of being screened, and open from the solid half of the building. This protects the opening from robbers. A screen panel above the doors lets out the heat. Here in Imperial Valley we are often at work with the thermometer in the shade well over 100 Fahr.

I favor a portable house, for the reason that, with the changing of crops, a whole district may be plowed up and become of no value from the apiarist's standpoint. One of the troubles of a really portable house is the roof. I have seen many materials used; but the cheapest, simplest, and best is a wagon-cover 12 x 14 feet of strong 12-oz. standard duck, made waterproof and durable by the use of beeswax dissolved cold in gasoline. The mixture must be very thin, and applied with a brush. Oil-dressed duck rots faster, and is stiff and hard, while beeswax is pliable and resistant to wet.

I do not want bees around my workshop; therefore it is away from the extracting-house. All I ask for is a good workbench and elbow room.

The extracting-house is made up of four panels—two ends and two sides. The side-panel framework is made up of 2 x 3-inch pieces except the top rail, which is a 2 x 4, with outside top edge beveled to fit the slope of the roof. The extra inch makes a small eave on which to fasten the canvas.

The north side panel is all wire screen; the south side all wood, put on from the inside. The building is put together with 4-inch nails, a brace, a No. 3 or 4 bit being used to drill the hole, thus preventing splitting. If the lumber used is surfaced on four sides it will make a better job than rough lumber, as the former is of better quality, and almost free from knots. The end-panels framework is 2 x 3 inches, the ridge being 3 inches above the side plate.

The corners of the building are held together with 5-16-inch lag screws 3½ inches long. I use a No. 5 bit thru the first half and No. 4 bit for the screw part. The door is made of light wood, and opens on the south side. This throws the bees back against the screen. A wood door and screen window attract fewer bees to the exit, as the scent is emitted thru the screen. The question of two doors is a matter of choice; but they are a great convenience during the afternoon. The east door can be used, as the bees are on the west side of the building at that time. Bees are always attracted to the sunny side of the house.

To close the building for winter stores or workshop, use shutters of beaver boards on a wood framework.

The uncapping-can is a double washtub, the upper one with wire bottom. A pipe from the lower tub leads to the receiver from the extractor. A sack is laid in the top tub to catch the cappings, and in this manner the cappings are easily carried, when dry, to the solar extractor.

Gray Heber, Cal.

REARING BROOD IN MID-WINTER IN THE CELLAR

BY GEO. H. REA

Speaking about raising bees by artificial feeding in the cellar, Mr. Editor, here is something that will interest you.

Friday, January 28, temperature 70, sun shining brightly, and no wind, I could not resist the temptation to set a few colonies out of the cellar and play with them awhile. Fifteen colonies were put out. I have never seen bees in better wintering condition. Not a sign of a spot did they make in their splendid flight, either on the hives or the white shirt that I wore. In the afternoon they were so thick on the ground, gathering water, that one could scarcely walk about the yard without tramping on them.

These bees were cellared December 5. Winter stores were mostly buckwheat honey with a little goldenrod and aster honey. Six, that were a little light when cellared, were given a candy cake (about one pound) to be sure that they would go thru a long winter's confinement. The candy is nearly all consumed.

Under the stimulus of this slow feeding, these six colonies now have brood in from one to three frames, young bees emerging by the hundreds, and the queens laying eggs as in spring. None of those without candy have brood or eggs. All were equally quiet in the cellar.

Perhaps the fellows who don't believe in this abnormal brood-rearing will have a chance to say, "I told you so," next spring; but I am not worrying about it. I have had this experience before. More about that candy and another feeding experiment later on.

So far the open winter and unusually warm winter weather have not affected our cellar temperature. It holds right along at 43. After twelve years of cellar wintering, and with a number of cellars part of the

time, I am convinced that it is the best method of wintering, in this part of Pennsylvania at least. About an average of 43 degrees, and as little change as possible from that, seems to be best.

Beekeepers should look well to the bees' winter stores. The unusual amount of flying weather will cause heavy consumption of honey. Many colonies, especially in the central and eastern counties, were light in the fall, anyway.

The regulation cake of bee candy may be given, or a feed of thick sugar syrup may be given on one of these warm days. Now, I suppose some one will hold up his hands and cry out against winter feeding because it will stimulate brood-rearing—a cold spell coming, consequent losses, etc. It won't hurt if the feed is all given at one time and made with just sufficient water to melt the sugar, and no more. Bees will fly frequently from now on, anyway, but it would make no difference if they didn't fly for a month.

It is interesting to know that, notwithstanding our small appropriation for apiary inspection, 933 apiaries were visited, 9384 colonies inspected, and 258 cases of foul brood found and cared for. Of these, 61 were American foul brood and 197 European foul brood.

THE SPREAD-OUT HIVE.

M'Cready's Spread-out Idea hive, page 30, interests me. Most enthusiastic beginners invent a hive about the first thing they do, and generally it is about the most impracticable kind of hive too (no reflections on M'Cready's, however). This Spread-out Idea is good, only I think it needs some fixing. My twentieth anniversary in beekeeping will arrive next April, and I have a notion to invent a hive by way of a celebration. If I do, it will embrace the Long-idea and the Spread-out Idea. I may call it "The Ladies' Friend, or Anti-lift" hive.

Reynoldsville, Pa.

[Some two or three winters ago Mr. J. E. Marchant and later Geo. H. Rea were conducting some experiments in making bees breed while in our cellars. Both proved that by feeding candy they could build up weak colonies in mid-minter into thoroly strong ones with young bees. A constant supply of fresh food has a tendency to start brood-rearing; and, as they proved at the time, this can be done provided one knows how.

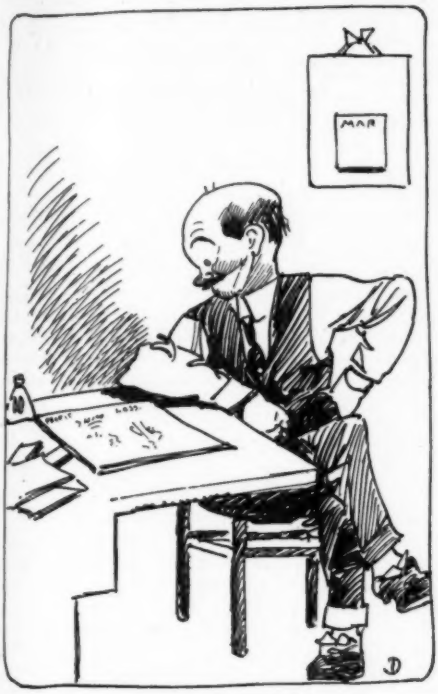
The average beginner and perhaps the average beekeeper would do well to let the proposition alone, for breeding in the cellar is sometimes accompanied with dysentery; but when nice clear crystalline candy is used, and cellar conditions are right, there will be but little danger.

Mr. Rea, who is now back in Pennsylvania, it would seem has been trying the same experiment again, and he was likewise successful again, even in a different locality and in a different cellar.

What man has done, man can do, but it does not follow by any means that all men should try mid-winter feeding.—Ed.]

Gold medal offered by the Michigan Beekeepers' Association at the fiftieth annual convention at Grand Rapids, Dec. 15 and 16. Awarded to Mr. and Mrs. Floyd Markham, Ypsilanti.
See report by F. Eric Millen, page 125, Feb. 1.

Heads of Grain From Different Fields



The Backlot Buzzer

BY J. H. DONAHEY

Of all the uses for honey the one where you hand a couple of well-filled sections over the line fence to your skeptic neighbor is about the best recipe of all.

We shall have one of the best honey seasons next year, I think, I ever saw, judging by the white clover. In all my years of beekeeping I never saw a better prospect. Bees went into winter quarters in good shape. All have plenty of winter stores. Unless something unforeseen interferes, I think we shall have a record-breaker of a honey crop. J. W. Bittenbender.

Knoxville. Ia., Dec. 2, 1915.

Honey Souring in Combs

I should like to know if honey in the comb or otherwise ever goes bad. I do not mean sour—just bad, so it would be harmful to eat it. What are the causes? Would the presence of wax-worms do it if I had found nests in some of it? I am speaking of honey taken off hives last fall, and kept in a dry place in extracting-frames, the frames in the supers covered. Wm. C. Nelson.

Mount Vernon, N. Y., Jan. 18.

[Honey in the comb will sometimes sour, become watery at other times, so as to be too thin, and the excess of water in the honey may be the cause of the souring. Some honey is more inclined to turn to an acid flavor than others. Of course, the honey may granulate in the combs; but this is no sign of inferiority. There is no other change that takes place in honey that we know of. The presence of wax-moths would have nothing to do with the matter. If honey is kept in a warm dry place it should ordinarily keep in nice condition; and the warmer and drier it is, the less tendency there is to granulation and turning sour.—Ed.]

A Honey-bread that is Genuine

In reply to your editorial, page 45, Jan. 15, I will say if the food commissioner were to get after me I would not have to plead guilty, as I could show him that my bread contains honey. Being entirely alone for the past dozen or more years I do my own cooking and baking, and invariably put honey in my bread, and nearly all other baking and cooking. I use at least a part honey; and if every family would do this we should need more bees to supply the demand.

Union Center, Wis. Elias Fox.

Another Course in Apiculture

The Agricultural College at Cornell is offering this coming term of 1916 a course in practical beekeeping. The course consists of one lecture and two laboratory periods of 2½ hours each, weekly. The students are to be given practice in nailing hives, making wax, making hard and soft candies, artificial cell-cups, etc. Later on, when weather permits, each one will have opportunity to handle the bees, and will be required to mount a collection of the nectar-yielding plants of this region. I think you will be glad with me that the great State of New York is at last waking up to the importance of her beekeeping industry.

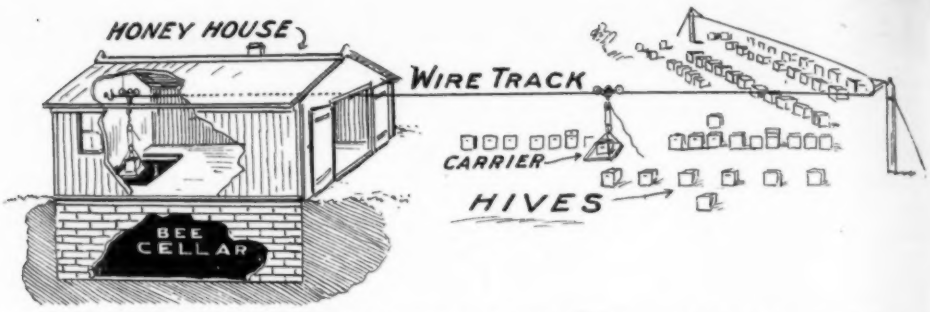
Ithaca, N. Y. Wendell T. Card.

Is It Necessary to Mark the Net Weight on a Pitcher of Honey?

If one of my neighbors brings a pitcher for some extracted honey, is it necessary for me to tag the pitcher so much net? Can a trader have a sixty-pound can of honey in his store, and draw out of it for a customer? Can I sell a section of honey to my neighbor without stamping it? J. B. Mason.

Mechanic Falls, Me., Jan. 27.

[Unless you do an interstate business it will not be necessary for you to mark anything. If Maine has a net-weight law of its own it would be necessary for you to mark the exact contents by weight or measure of any regular package of any commodity that you might be selling. As a pitcher is not a regular package it would not be necessary, in our opinion, for you to mark this in any manner whatsoever. In fact, it would be impractical. The law contemplates only



regular packages that are supplied to the trade or to individuals. A glass tumbler or a jar, tin can, or anything of that sort, would have to be marked with the net weight, either in quarts or gallons, or pounds or ounces. Usually a 60-lb. can is not considered a package; but to be on the safe side we would advise marking even a 60-lb. can when sent out.—Ed.]

Bees Have Trolley Ride

The sketch represents the plan of my honey-house, bee-cellar, and hive-carrier. The building is 16 x 24, 8 feet high, and the cellar is 7 feet deep. The carrier is of the barn-litter-carrier type, except that it is equipped with a small block and tackle for the purpose of lowering it to the ground while being loaded with supers for the extracting room, or with colonies for the cellar which are lowered thru a trapdoor in the floor of the honey-house. The heavy wire track will carry over 300 pounds. The track can be equipped with switches to accommodate many rows of hives. By using cement block for building, the above contrivance will cost about $200, not including labor.

Fairfax, Ia. C. F. Wieneke.

Honey-dew from Oak Galls

In the autumn of 1884 I was invited to inspect the apiary on the famous Rancho Chico, the estate of Gen. John Bidwell. I found over one hundred colonies in fine condition, and some had built comb and stored honey outside of the hive. Looking for the source of the extraordinary yield of honey I found that it came from galls on the white oak. Many trees were covered with the exudation, as if it had been sprayed on by the hundreds of gallons. Some trees were more abundantly supplied with the galls than others; but the infestation was practically universal.

These galls were about the size of a common pea, and so numerous on the terminal twigs that frequently there would be several in an inch length of twig. So profuse was the exudation that, solidifying as it dripped, it hung like stalactites.

This honey-flow is not like the flow caused by aphides, the producing insect being entirely different. It was found that the exudation from the gall took place while the insect within was in the form of a grub or worm. Later the grub transformed into an imago, and finally emerged a delicate-winged insect that seemed to be a miniature honeybee. Many of the winged insects appeared in December of the same year. While the same galls and attendant exudation have been seen by me in later years in a minor degree, there has never been anything so profuse since.

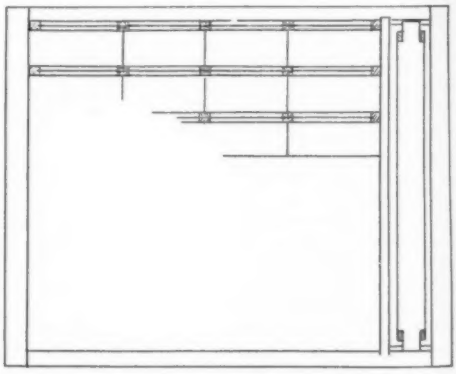
Placerville, Cal. H. G. Hulburd.

Sounds Cold from Oregon

I always thought that Oregon had a fine climate, but I think it is about as changeable as that of any other state. At present we have 10 inches of snow, and it is still snowing. Last night my bee-shed got so heavy with snow that it broke down, falling on the hives. It didn't do much damage, but I shall have a little fun fixing it up again.

My bees did very well last season, and are in very good shape at present; but I don't know what this cold snap will do to them, as I was not expecting such cold weather here in the valley. It is 10 degrees above zero today, Jan. 13.

Aurora, Ore. C. E. Sprague.



Here is a super which I have found very serviceable, allowing the use of 4 x 5 sections without waste of space, and providing for an extracting-frame. Any 16 x 20 deep super can be used.

Ann Arbor, Mich. E. G. Mann.

A. I. Root

OUR HOMES

Editor

Eye hath not seen, nor ear heard, neither have entered into the heart of man, the things which God hath prepared for them that love him.—I. COR. 2:9.

I have been reading the *Sunday School Times* for so many years I could hardly attempt to tell how long, and it was one of my "happy surprises" when I found glimpses on its pages that its editors had been reading these Home papers of mine at least occasionally. Well, some two or three years ago I was *again* "happily surprised" to receive a personal letter from Chas. Gallaudet Trumbull, telling me of a wonderful new spiritual experience he had just received. I at once wrote him asking permission to print the letter in these Home papers. I have never heard from him personally since, and, of course, I could not give the letter to you all. I have, however, been pleased to get glimpses of this experience in almost every issue of the *Times* since. The tract we have been sending out, "The Defeat of Injustice,"* is one of the fruits of that experience. A few weeks ago at our Bradentown prayer meeting I read the following clipping from the *Sunday School Times:*

"Daddy, did you notice tonight that I bowed my head and put my hands up to my eyes?"

The little girl of five years had cuddled into her father's arms in a corner of the library while the evening shadows were gathering, for one of the precious little times of confidences.

"I was naughty today, Daddy."

"Were you, Annie?"

"Yes, and I was asking Jesus to forgive me. Whenever I am naughty now I bow my head and just tell Jesus, and ask him to forgive me."

"And he always does it, doesn't he, Annie?"

"Yes," the little girl answered. And then in a sudden burst of confidence she poured out the problem of her child-heart. "Daddy, it's awful hard to be good, isn't it?"

That heart-cry of the little girl finds its response in every Christian's heart. No man would wish to deny the truth that is wrapped up in that confession. Yet there are two serious falsehoods implied in our "axiom," "It's awful hard to be good."

It is not only hard to be good, but it is utterly impossible for fallen man to be good. A Christian has come to an encouraging point in his experience when he is able to realize this. Not only is it true that "none is good, save one, even God," but it is also true that no one else *can* be good. This is the message of the Incarnation. God in Christ came in the flesh and "was good"—a thing that was impossible for fallen man.

Then I followed it with part of a letter from our son Huber, as below:

Dear Father:—At the Laymen's Missionary Conference in Cleveland last week I had the opportunity to hear Charles Gallaudet Trumbull, editor of the *Sunday School Times*. He made a splendid address, and I wish you could have heard him. The whole theme of his address was this: During a time of temptation make no effort to fight against it yourself, but let Jesus Christ carry on the fight. He illustrated his point by telling a story. It seems that a little girl, after joining the church, was asked by an older person whether she felt any different since becoming a Christian. She replied that she most certainly did. When her friend asked her in what way she felt different she said, "Now when Satan knocks at the door of my heart I just tell Jesus to go to the door, and I pay no attention to it myself. When Satan finds Jesus at the door he merely says that he guesses he has made a mistake, and has come to the wrong house."

After the meeting a lady who had just attended some large religious gathering handed me a tract, saying she felt sure *I* would be interested in it. Now, to tell the truth, so many "tracts" are piled up on my desk unread I feared this would only add to their number; but when I saw it was from my good friend Trumbull I changed my mind. I have now read it thru three times, and "then some." The title of the tract is, "The Life that Wins." There are 20 pages in the tract, and I give you below the contents of the first two.

AN ADDRESS (REVISED) BY CHARLES GALLAUDET TRUMBULL BEFORE THE NATIONAL CONVENTION OF THE PRESBYTERIAN BROTHERHOOD OF AMERICA, 1911.

There is only one life that wins; and that is the life of Jesus Christ. *Every man may have that life; every man may live that life.*

I do not mean that every man may be Christlike. I mean something very much better than that. I do not mean that a man may always have Christ's help. I mean something better than that. I do not mean that a man may have power from Christ. I mean something very much better than power. And I do not mean that a man shall be saved from his sins and kept from sinning. I mean something better than even *that* victory.

To explain what I do mean, I must simply tell you a very personal and recent experience of my own. I think I am correct when I say that I have known more than most men know about failure, about betrayals and dishonorings of Christ, about disobedience to heavenly visions, about conscious fallings short of that which I saw other men attaining, and which I knew Christ was expecting of me. Not a great while ago I should have had to stop just there, and only say I hoped that some day I would be led out of all that into something better.

Please note above what he says about "power." In these days of automobiles, when not only boys but *girls* too learn to run them; when you feel you have at the tips of your fingers *power* to go just as fast as any one can want to go, and, too, by practice, run almost to a hair's breadth of where you wish to go, who has not felt the thrill of being entrusted with such power? Well, Trumbull speaks from experience of something "much better than power." I read the above part of the tract to our large Bible class in our Sunday-school here, and they wanted me to go on with it, just as

* See page 557, July 1, 1915.

many of you, dear friends, would have me do; but you really need the whole of the tract to get the writer's secret. The little girl mentioned in Huber's letter had touched the point. I will give just one more extract from p. 13.

What I mean is this: I had always known that Christ was my Savior but I had looked upon him as an external Savior, one who did a saving work *for* me from the outside, as it were; one who was ready to come close alongside and stay by me, helping me in all that I needed, giving me power and strength and salvation. But now I knew something better than that. At last I realized that Jesus Christ was actually and literally within me; and even more than that: that he had constituted himself my very being (save only my resistance to him), my body, mind, soul, and spirit. Was not this better than having him as a helper, or even than having him as an external Savior—to have him, Jesus Christ, God the Son, as my own very life? It meant that I need never ask him to help me again, as tho he were one and I another; but, rather, simply to do his work, his will, in me, and with me, and thru me. My body was his, my mind his, my will his, my spirit his; and not merely his, but literally a part of him; all he asked me to say was, "I have been crucified with Christ, and it is no longer I that live, but Christ liveth in me." Jesus Christ had constituted himself my life.

Now, here is something that took hold of *me* more than almost anything else on the whole 20 pages. Read below:

Do not think that I am suggesting any mistaken, unbalanced theory of perfection or sinlessness in what I have been saying. The life that is Christ reveals to a man a score of sins and failures in himself where he saw only one before. He is still left the free will to resist Christ; and my life, since the new experience of which I speak, has recorded shamefully many failures and sins of such resistance. But I have learned that the restoration after failure can be supernaturally blessed and complete.

As I write on this 3d day of Feb., 1916, I feel that I have made a little start on "The life that wins," and the first revelation that comes to me is, as expressed above, where I saw only *one* sin before, there are now "scores." Sheldon, in one of his books, suggests, "What would Jesus do" were *he* in your place? Dear friends, you have given me scores of kind words. They are coming all the time. As I think of it, the chorus of the old hymn that the good woman wrote comes to mind.

Lord, lift me up and let me stand,
By faith, on heaven's tableland,
A higher plane than I have found;
Lord, plant my feet on higher ground.

NON-RESISTANCE AND LAW ENFORCEMENT.

The two letters below explain themselves.

Did A. I. Root ever consider that the plan of salvation brought to us by Jesus Christ teaches us non-resistance? He suffered all patiently to redeem mankind from their sins, and wishes his followers to follow in his footsteps. L. A. R.

I am a reader of GLEANINGS, and am pleased with the Home department, and have frequently thanked God for the spirit of boldness he has given you to express your convictions on religious and other important subjects. Of course, I do not approve of all your ideas; but in such cases I turn your idea over to the Lord and tell him to let the light on you and also ask him to search me; and, if I am in the dark, let the light on me. I often say, "Lord, do not let me be deceived on any line." The psalmist prayed that way. He also prayed, "Keep back thy servant from presumptuous sins; let them not have dominion over me," etc.

In looking over the Home papers of June 15, I notice Bro. Poister's admonition. Thank God for such men. Now, I think that carries the spirit of the Master. Brother Root, do not pass that admonition lightly by. Paul says to the Romans, "If any man have not the spirit of Christ he is none of his." Now, if you find in any of Christ's teaching the spirit of fight or defense, use it. But if you cannot find it, beware of your own ideas.

I was surprised to notice that you regard the scripture quotations the brother referred to are merely for neighborhood differences. Are we to understand you that the Son of God left the Father's throne and shed his blood merely for neighborhood differences? Was it not that he came to save that which was lost? Brother Root, let us take the Lord Jesus for our example in suffering in any shape or form, and I then am sure we shall not miss the blessing. In conclusion, please take this in the spirit it was given—not in malice or any ill feeling, but in love; and if you want to defend yourself give us a "thus saith the Lord."

Abilene, Kan., June 20. N. G. HERSHEY.

My good friends, I do not know but we are all getting into "deep water" when we undertake to discuss this question. Our Lord and Master once drove the money-changers out of the temple with a whip; but it has been claimed that this whip was only harmless cords. Again he says, "I came not to bring peace on earth, but a sword;" and I suppose sermons have been preached and books written on this very passage. My opinion is that it refers particularly to the enforcement of law. Again, Jesus came to earth on a special mission; and that mission was summed up, I believe, by the words "Peace on earth, good will to men." And, once more, it is my impression that this refers to law enforcement. How about making counterfeit money and passing it? Counterfeiters almost always fight with guns and pistols when their gang is broken into. And, once more, in regard to the liquor-traffic. Shall we apply non-resistance to this and let the business go on? God forbid. Once more, it is quite a different matter whether the sin affects the individual alone or humanity in general. When a blow comes to me individually on the right cheek, I believe it is my duty to turn the other cheek also. But in case of a blow against all humanity, like counterfeit money, or against suffering men and women and children in consequence of the liquor-traffic, then I believe our Lord and Savior would have me fight to the best of my ability for the suffering ones.

NON-RESISTANCE; AND DID JESUS MEAN TO SAY THAT WE SHOULD NOT PROTECT OURSELVES AS A PEOPLE AND AS A NATION?

A. I. Root:—Properly speaking, Jesus did not say, "Resist not evil." The Greek word which is translated "resist" in Matt. 5:39 is translated elsewhere in our English Bible either "resist" or "withstand." It is used in fourteen places in the Bible—Matt. 5:39; Luke 21:15; Acts 6:10, 13:8; Rom. 9:19, 13:2 twice; Gal. 2:11; Eph. 6:13; 2 Tim. 3:8 twice; 4:15; James 4:7; 1 Peter 5:9. An inspection of these places will show that the word cannot be supposed to carry in itself any particular reference to the use of physical force. A fuller study of this Greek word (which is just as open-faced a compound as the English "overthrow" or "outrun") shows that it does not express the idea of any activity at all, but simply of taking an attitude or staying in an attitude, while "resist" necessarily expresses the idea of an activity directed against the antagonistic person or thing. In this respect "oppose" would be a more exact translation, though "oppose" would not be very perfect either.

Since the word does not express anything so particular as the use of physical force, we have to judge of its force in this passage from the connection. The connection is along such lines as these: Do not make a point of seeing to it that every misdeed is paid off, but bear petty outrages without setting yourself in opposition. It is very important to note that all Jesus' instances are of petty outrages. Now, a man chooses his instances so as to be appropriate to his meaning. It would be perfectly ridiculous if a man meaning to say that we should not resist an attempt at murder or the robbery of a lifetime's savings were to express this by saying, "Do not resist a slap on the cheek or an extortion of half an hour's work." Now, even among those who are (as Anacharsis Clootz said of himself) "personal enemies of Jesus Christ," nobody denies that Jesus knew how to express himself tellingly. If Jesus knew how to express himself as intelligibly as ordinary men, then by those words about a blow on the cheek, etc., he did not mean the most serious outrages.

My understanding of the meaning is like this. A Christian is concerned in this world with things he is to recognize as much more important than standing up for his rights; properly, standing up for his rights is no object at all to him; and if he is to stand up for his rights whenever they are violated he will have no time left for his Christian duties; besides, the fact that standing up for his rights will sometimes work against the objects that he as a Christian is pursuing. So he should not make it a rule to stand up for his rights. But if the things that are being done to him are such as to interfere with his doing the things that it is his Christian business to do, then it is a part of his Christian business to put out of the way whoever and whatever interferes, provided that it does not cost more in time, nerve-force, and arousing of hostility, than it is worth.

At present a mighty attempt is being made in the world to give war the right of way; to insist that, when war is started, interests of peace must give way to interests of war. If this attempt should be successful, it would set back the cause of peace at least a century. Anything that we can honestly and lawfully do to defeat this attempt, whether by selling arms or otherwise, is well done. A great deal of the talk about the exportation of arms leaves out of account the fact that the actual exportation of arms is simply helping honest and peace-loving people to defeat violent crime. It is as if I saw John Doe jump up and begin shooting at Richard Roe because Doe had heard Crazy Joe say that Roe meant to steal Doc's chickens, and I should hand Roe a gun, since the circumstances were such that Roe must fight or go under, and the people should tell me I was doing—well, very unchristianly by helping to arm a fight.

STEVEN T. BYINGTON.

Ballard Vale, Mass., June 25.

POULTRY DEPARTMENT

HOW TO MAKE HENS STOP LAYING?

"Whew!" says some one. "Why should anybody want to make hens *stop* laying?" Well, it's something like the boy who wrote a composition on pins. He said pins had been the means of saving many lives. When the teacher asked him to explain in what way *pins* saved lives, he replied, "By not swallowing of 'em." Again, don't you know that, when our great doctors want to get control of an epidemic, they first proceed to *cultivate* the bacteria, and when they can get it to growing in their "pure cultures" (I think they call it) they can then formulate an antidote. Now to business.

When I first got here, as usual our 60 hens began to increase in laying; but after they got up to about 18 eggs a day, to my surprise (and disgust) they dwindled back to only five or six a day. I told neighbor Abbott about it, and when he found I was giving them a mash of shorts and boiled *sweet potatoes* he said at once that sweet potatoes, either raw or cooked, would *"stop hens laying."* He added further, "You can give them to your growing stock, sitting hens, or hens with chickens, or to a pen of roosters, but never to laying hens."

I stopped the sweet potatoes, and soon I had toward two dozen eggs a day. Let me explain further.

A year ago we set out sweet potatoes in December and January, and I didn't get back here to dig them for almost a year. They were not only very large, but very poor. We used the best for the table, and boiled the rest for mash, as explained; in fact, some of them were partly decayed; but as the fowls ate them greedily I thought it would do no harm. Now, is it only *bad* sweet potatoes that stops laying? Mr. Abbott thinks not. A neighbor's hens got into the sweet potatoes, dug them up, and ate them raw, and very soon he did not get an

egg. Can our readers tell us more about this? I feel pretty sure that too much of a certain diet of many things will cut down the egg yield, and it is also true that a change in diet will often *add* to the egg yield. Plenty of sprouted oats, or even green oats a foot high, will often do it.

SPURS ON MALE FOWLS; HOW TO REMOVE.

I will tell you my way of taking spurs off, and you can do it in a few minutes. Put on the fire, in a pan of water, two potatoes about the size of a nice apple. Boil till nearly cooked, and then push each potato on a spur and keep it there for a minute or two, when the spur will come clean off.

JAMES SMITH.

Kirkmahoe, Dumfries, Scotland, Nov. 9.

HEALTH NOTES

COTTAGE CHEESE OR "DUTCH CHEESE," AND HOW TO MAKE IT.

Mr. A. I. Root:—In your Home department, you occasionally make mention of "cottage" cheese as a very wholesome article of diet. I wish you would, in an early number of this magazine, describe the process of making this kind of cheese. From what you have said about it from time to time, the writer's mouth waters for it, and he is anxious to try his hand at making it.

Halls, Tenn., Jan. 15. J. C. SAWYER.

My good friend, I supposed every housewife in the land knew how to make cottage cheese, or what is called in many places "Dutch cheese." Mrs. Root says, set sour milk on the stove until it is about as hot as you can bear your finger in. Then pour it into a cloth bag, strain out the whey, and season to taste.

CURING BEESTINGS, POISON IVY, ETC.

More than forty years ago, when I first made the acquaintance of the honeybee, beestings were very painful, and swelled on me, and I listened with very much interest to everybody who had a remedy for beestings. The juice of different plants, a piece of onion, potato, a little bit of mud, etc., were carefully tested; but I soon decided that it was only a notion or the effect of the imagination. Then somebody advertised something in a bottle. In fact, a beesting cure had been advertised in the bee-journals more or less; and as good a man as Dr. A. B. Mason, of Toledo, declared that the essence of peppermint or some other essence, I cannot remember what, was a *sure* cure. I said first, last, and always, "Pull out the sting. Do not rub the place, nor meddle with it so as to diffuse the poison, but get busy, and get your mind off from it, and the pain and swelling will soon go away;" and my impression is that the beekeepers of our land gradually came to the same conclusion I did. Get out the sting, and get it out with a knife or a pair of tweezers so as not to squeeze the contents of the poison-bag into the wound.

Well, of late our agricultural papers have been giving cures for ivy poison, and I have all the time felt confident that a careful experiment would prove about the same as with the beesting. The matter was brought to mind by a clipping, but I cannot tell just now what periodical it came from. The closing words, which I have put in italics, are what caused me to give it a place here:

CURES FOR IVY POISONING.

The *American Botanist* publishes a letter from a Brookline, Mass., correspondent stating that fishermen along parts of the Massachusetts coast find a prompt cure for the effects of poison ivy and poison sumac in the fireweed (*Erechtites hieracifolia*). The poisoned parts are rubbed with the leaves of this plant, which must be fresh each time, bruised and crushed so that the sap moistens the skin freely. An editorial note mentions the fact that a large number of other plants have been recommended for ivy poisoning—notably touch-me-not and burdock—but that "*it seems doubtful whether any of these herbs can do more than take the attention of the patient from his troubles and cure him by mental suggestion.*"

Let me call attention to one point in all these remedies. If it were true that the juice of fireweed is an antidote for poison ivy, how did anybody happen to discover it? Edison has been called the greatest inventor of the age; and here comes the point—how does he accomplish his inventions or make his great discoveries? Why, he did it by making thousands of tests, on storage batteries, for instance. I think I have seen it stated how many combinations he made with chemicals before he brought out his present storage battery. Now if catnip, tansy, and a great lot of weeds have power to cure diseases, the only way to settle it would be to get a hospital full of patients suffering from one particular ailment. Then bring on your herbs—a hundred, or, better, a thousand. Squeeze out the juice or make some tea and give to the patients, and notice the effect. If catnip tea gives relief to thirty or forty, and the other patients are not helped, then we may be pretty safe in saying that catnip possesses medical qualities for certain diseases. Has such an experiment ever been made? Not that I know of. Of course our grandmothers gave catnip tea to the children that were ailing, and they got better, forgetting that nine times out of ten they get better without catnip tea, and so on.